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ALFRED P. SLOAN SCHOOL OF MANAGEMENT

STRATEGY TRAINING: A NEW APPROACH TO GUIDANCE

PART II

Assessment of the Strategy Training Program¹

233-66

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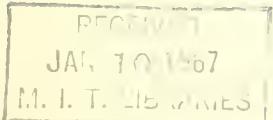


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CHAPTER 3

Assessment of the Strategy Training Program - Experimental Design

In order to assess the effects of the Strategy Training Program on students in the experimental classes, it was necessary to select a similar group of subjects for comparison. The experimental design was to teach the STP to our specially-trained ESG teacher's two classes and to compare changes in his students with changes in a group of matched control students selected from the rest of the ninth grade at the junior high school.

To insure that the experimental and control groups were as equal as possible before the Strategy Training Program was started, each experimental subject was matched with a control on five variables: sex, I.Q., school achievement test scores, school grade average, and the discrepancy between real and ideal self-concept (self satisfaction). The use of five matching variables made it difficult to do a precise job of matching on all of them, even though there was a large pool of prospective control subjects. As a result, we tried to be exact on the first two variables -- sex was matched exactly, I.Q. was matched so that the two scores fell well within the .05 confidence limits of the test (e.g., if the confidence limits were ± 3 the pair of I.Q. scores had to be within 3 points of each other) -- and to match the last three as best we could.

To test whether this matching procedure accomplished the goal of selecting a control group which was not initially significantly different from the experimental group, the two groups were compared on the

five matching variables plus all of the other variables in the study. A "t" test for correlated means was performed on the following variables: I.Q., math achievement test scores, verbal achievement test scores, 8th grade average, the self satisfaction score, real self concept, ideal self concept, the teacher rating categories (described below), and the School Strategy Test variables (described in Chapter 4). On all variables the probability that the two groups came from the same population was larger than .10 and this probability was in most cases much higher (see Table 3-1). From this we can conclude that the procedure of selecting a matched control for each experimental subject was successful in producing an experimental and control group which were quite similar.

The final subject numbers were as follows: the experimental group had 27 boys and 19 girls and the control group had 27 boys and 16 girls (one control girl left school and two experimental girls entered school soon after the start of the experiment).

Test Instruments

1. The Teacher Rating Form. At the close of Chapter 1 we listed seven strategies which we felt the STP would teach students. To measure these strategies we developed a form which teachers could use to assess students. On this form, each of the seven strategies was defined by giving examples of how the strategy might be evidenced in a student's behavior. Following this same format, four other variables were included on this form. Two of these were included to get the teacher's evaluation of the student's self-concept - they were a rating on feelings of mastery and a rating on self-respect. The other two ratings were global ratings



TABLE 3-1

Comparison of Experimental and Control Groups in the Pretest Period

Pretest Variables	Experimental Group		n	Control Group	n	P of Difference ¹
I.Q. *	̄ SD	112.1 10.3	44	113.5 9.1	43	NS
Mathematics Achievement Test*	̄ SD	43.4 16.4	44	43.9 17.8	43	NS
Verbal Achievement Test*	̄ SD	56.1 13.6	44	58.0 13.8	42	NS
8th Grade Grade Average*	̄ SD	5.93 1.14	42	6.19 1.27	43	NS
<u>Self Concept</u>						
Real Self Concept	̄ SD	160.2 31.5	42	153.2 25.6	43	NS
Ideal Self Concept	̄ SD	105.4 35.3	42	99.3 25.8	43	NS
Self Satisfaction*	̄ SD	54.8 28.5	42	54.0 29.4	43	NS
<u>Teacher Ratings</u>						
Risk Taking and Decision Making	̄ SD	4.00 1.26	35	4.00 1.33	43	NS
Self Research and Use of Feedback	̄ SD	3.89 1.95	35	3.77 1.75	43	NS
Personal Responsibility	̄ SD	3.73 1.80	35	4.26 1.69	43	NS
Involvement	̄ SD	3.94 1.81	35	4.09 1.67	43	NS
Creating Behavior Alternatives	̄ SD	3.53 1.63	35	3.58 1.51	43	NS
Persistence	̄ SD	3.73 1.91	35	3.74 1.71	43	NS
Tolerance of Ambiguity	̄ SD	3.82 1.79	35	3.65 1.64	43	NS
Feelings of Mastery	̄ SD	4.20 1.65	35	4.21 1.44	43	NS
Self-Respect	̄ SD	4.26 1.29	35	4.28 1.44	43	NS



Table 3-1 continued.

<u>Pretest Variables</u>	<u>Experimental Group</u>		<u>n</u>	<u>Control Group</u>		<u>n</u>	<u>P of Difference¹</u>
<u>School Strategy Test</u>							
Suggestions	\bar{X} SD	3.09 2.05	44	3.10 1.46	41	41	NS
Variables	\bar{X} SD	1.73 1.80	44	2.10 1.63	41	41	NS
Evaluations	\bar{X} SD	0.48 0.94	44	0.46 0.94	41	41	NS
Proactivity	\bar{X} SD	1.00 1.31	44	1.27 0.88	41	41	NS

*Matching variables

¹T test for correlated means, 2 tail probability

NS = P > 10

of effectiveness - one was labeled Interpersonal Skills; the other Global Effectiveness.

The resulting form had eleven categories which were rated on a seven point scale. These eleven variables are listed below (a copy of the Teacher Rating Form can be found in Appendix I):

Strategy Training Variables

1. Risk-taking and decision making
2. Self-research and use of feedback
3. Personal responsibility
4. Involvement
5. Creating behavior alternatives
6. Persistence
7. Tolerance of ambiguity

Self Concept Variables

8. Feelings of mastery
9. Self-respect

Global evaluations

10. Interpersonal skills
11. Global effectiveness

In the pretest, posttest, and followup periods the Teacher Rating Form was given to two teachers of each experimental and control subject. We tried to pick teachers who knew a given student well. In most cases the result was that a student's mathematics and English teachers were the ones who rated him.

In the pretest and posttest, students were rated by the same teacher in both testing periods. In the followup students were, of course, rated by different teachers, usually their high school mathematics and English teacher. The experimental group (STP) teacher did not rate anyone.

Reliability coefficients were not computed on these teacher ratings since teachers who rated a student did so in different classroom situations. A mathematics teacher usually saw a student only in math class while the English teacher usually saw him only in her class. Since students behave differently in different classes with different teachers, we predicted little correspondence between teacher ratings. Following the work of Gross (Gross and Herriott 1965) who found low correlations between teachers' ratings of students in a similar situation to ours, we decided to use the mean of the two teachers' ratings as the best single indicator of a student's behavior.

2. The School Strategy Test. In addition to measuring changes on teacher ratings, we sought a means of measuring changes in a student's approach to problems. Put most generally, we wanted to find out if STP students improved in strategy problem solving. To accomplish this task we devised several short descriptions of typical problems which an adolescent student might face. Students were then given one of the problems and asked a series of seven questions about it. These questions began very generally (What will happen?) and became more specific (What other information, if any, would you need to solve the problem and how would you go about getting it?). After pretesting these problems we chose the one which seemed to attract the most interest and most universal response. The problem is reproduced below. (For full copy of the School Strategy Test see Appendix II).

ANDY

The Western City High School Chess Club needs money - at least fifty dollars - to cover travel expenses for their tournament with Frasertown. They have decided to sponsor a dance. Andy, who has been elected chairman of the fund raising committee, learned that when the Dramatics Club ran a dance last year they lost over twenty-five dollars. As it turned out, forty-seven people attended. The band Andy wants for the dance will charge thirty dollars for the evening.

This standard problem was given three times to all experimental and control subjects; in the pretest, the posttest, and the followup. A number of empirically derived scoring categories were developed to measure changes in strategic problem solving. These categories and the procedure by which they were developed will be fully described in the next chapter.

3. The Self-Concept Instrument. A self-concept measure specifically devised for student populations by Coopersmith (1959) was used in this study. This test asks the student to rate himself on his current and ideal ability in sixty different areas. Three different global scores are acquired by summing the ratings in the sixty areas - an ideal self score, a real self score, and a self-satisfaction score (the difference between ideal and real self). (See Appendix III for a copy of this instrument.)

4. The Current Status and Future Plans Questionnaire. This questionnaire was devised to assess students' activities and plans in high school. It was given in the followup period to both experimental and control subjects. (A copy of the questionnaire is included in Appendix IV.)

5. Other Variables. In addition to the four instruments described the school grades and achievement tests scores for students were collected when available. These will be described in the next section.

Testing Periods

The experimental design is described in Table 3-2.

TABLE 3-2
Experimental Design

<u>Group</u>	<u>Time</u>	<u>January, 1963</u>	<u>One Semester</u>	<u>June, 1963</u>	<u>February, 1965</u>
Exp. (STP)		Pre-test	STP	Posttest	Followup
Controls		Pre-test	Regular Guidance Program	Posttest	Followup

Pre-test. In January, 1963 all ninth grade students in the junior high school were asked to complete the self-concept instrument and the School Strategy Test. In addition each student was rated on the Teacher Rating Form by two teachers who reported that they knew him well. Finally, the grade average for the student's previous year (8th grade), his I.Q. score, and verbal and mathematics achievement test scores were taken from his school record.

Posttest. In June of 1963, at the end of the STP, School Strategy Test protocols, teacher ratings, self-concept scores, and grades for the spring 1963 semester were collected.

Followup. In February of 1965, midway through the students' junior year in high school, a 1-1/2 year followup was conducted. At this time we attempted to contact all experimental and control subjects. Most of the students on leaving junior high school entered one of Newton's two high schools. Some students, however, had either moved away or gone to private school. For a few students, there were no records.

In the end, we were able to give our tests (Teacher Ratings, Self-Concept, School Strategy Test, and Questionnaire) to 81% of the original sample. We were able to get the first semester 1964-65 grades for 89% of these students. In Table 3-3 the number of persons contacted is broken down by group and sex.

TABLE 3-3

		Followup Returns	
Original Number of S's		Number Tested	Number For Whom Grades Were Avail- able
Experimental Group	46	37	41
Boys	27	21	23
Girls	19	16	18
Control Group	43	35	38
Boys	27	21	23
Girls	16	14	15

Method of Data Analysis

It may be useful at this point to give a brief overview of the data analyses to be presented in the following chapters. To begin with, the variables in the study were divided into two types - intermediate strategy training variables and criterion variables. The Strategy Training Variables were those strategies which we hypothesized the STP would teach. These variables were measured by the seven strategies on the Teacher Rating Form and the School Strategy Test Variables (described in Chapter 4). The criterion variables were self-concept scores, the self-concept teacher ratings, the global teacher ratings, grades, achievement test scores, and answers to the Current Status and Future Plans Questionnaire.

The major hypothesis of the study is that the STP will improve performance on the Strategy Training Variables and that this, in turn, will lead to improvements on criterion variables. To test this hypothesis several empirical links need to be established.

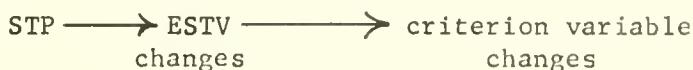
The first task is to determine empirically what ideas students learned from the STP. This was done by analyzing pretest to posttest changes on the Teacher Rating Form and School Strategy Test. Changes which were significantly different from control group changes were assumed to be a result of the STP. These results were called the Empirical Strategy Training Variables (ESTV) and represented our best estimate of the STP's immediate behavioral effects on the students. The above analyses are described in detail in Chapter 4.

Next we ask ourselves if high ratings on the ESTV were naturally related to high performance on the criterion variables. Stated more simply, we wanted to know if effective people used these strategies. To answer this question we intercorrelated the ESTV and criterion variables scores for both experimental and control subjects in the pre-test. This analysis reported in Chapter 5 shows to what degree ESTV and criterion variables are associated at one point in time.

In Chapter 6 are reported what are perhaps the most crucial results of the study - the comparison of STP and control group criterion variable changes in high school. The question answered here is: Did the STP significantly improve students' high school performance?

In Chapter 7 attempts are made to establish the relationship between pre-test and posttest changes in the ESTV and pre-test to followup changes in the criterion variables for STP students. This analysis

attempts to show that it was those experimental subjects who changed most in the ESTV who changed most in the criterion variables in high school. This is an important empirical link to establish in the argument:

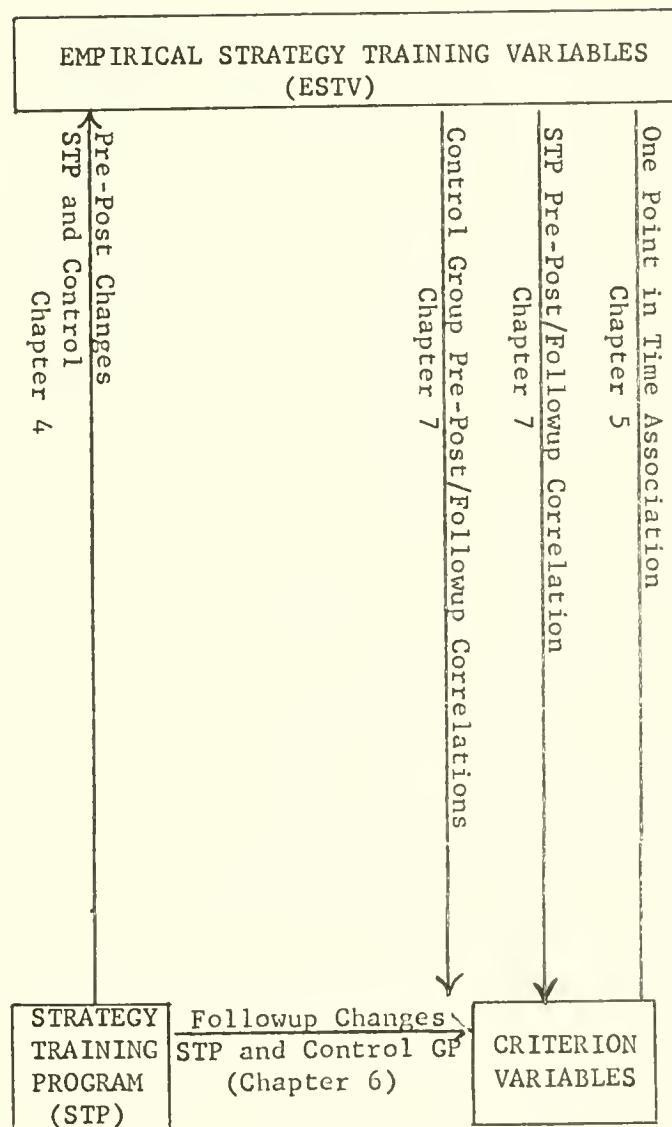


Chapter 7 includes this same analysis for the control group subjects. It is not enough to demonstrate the relation between ESTV changes and criterion variable changes in the experimental group. To show that it was the ESTV changes alone that brought about the criterion variable changes, and not some unique interaction between ESTV and other unmeasured STP themes; it is necessary to demonstrate a relationship between ESTV changes and criterion variable changes in a "natural" condition, i.e., the control group. If the control group correlations are not significantly different from the STP correlations, then we can assume that the ESTV changes as measured by the Teacher Rating Form and School Strategy Test in junior high school are causing the changes in criterion variables later on in high school. In other words, we are attempting in Chapter 7 to demonstrate that ESTV changes affect criterion variables regardless of whether these ESTV changes are "natural" or "induced" by the STP.

In Figure 3-1 we have diagrammed the relationships which will be investigated in Chapters 4-7. Note that, with the exception of Chapter 5, all of these relationships are directional, inferring that one causes the other. In Chapters 4 and 6 this assumption is made on the basis of experimental manipulation. In Chapter 7 this directionality is inferred because changes at one point in time (pre-test to posttest) are correlated with changes at a later time (pre-test to followup).

FIGURE 3-1

Diagram of Empirical Relationships Tested in Data Analysis



The last data Chapter (8) reports results for girls. As we will see in the next chapter, boys and girls responded very differently to the STP. The data in Chapters 4-7 will, in most cases, be for boys only. In Chapter 8 we try to follow the same pattern of analysis with girls.

Chapter 9 contains a summary of the results of the study and some implications of the findings.

Limitations of the Experimental Design

To facilitate the evaluation of the results which follow, we chose this chapter by discussing three limitations of the experimental design.

1. Subjects were not randomly assigned to treatment conditions by the Experimenter. This was practically impossible since it would have involved changing class assignments, home room teachers, etc. The situation is not so bad, however, since we were informed by the school administrators that assignment of students to teachers is done more or less randomly, usually on the basis of meeting a student's scheduling problems. Hence, the students assigned to the STP teacher's two classes are most likely representative of the remainder of the ninth grade from which the control subjects were drawn.

It is especially important that there are no initial differences between experimental and control subjects since after-only comparisons of differences between the two groups (e.g., on the Current Status and Future Plans Questionnaire) constitute an important part of the followup. This assumption of equality is further justified by the fact that experimental and control subjects were matched on important criterion variables and I.Q. (See Table 3-1.)

2. There was only one experimental group teacher and inadequate control for his personal style. To determine the specific effects of teaching the STP, teacher variables such as teaching ability, rapport with students, etc. are irrelevant and should be controlled. This could be done either by using a large sample of experimental and control teachers or by comparing the experimental teacher's results in teaching the STP with his results in teaching a control guidance program. Unfortunately, the limited number of available classes made both of these alternatives impractical in this experiment. Hence, it is difficult to conclude from experimental and control comparisons whether changes are due to the content taught, the teacher, or some interaction. However, the separation of assessment measures into strategy variables (the content being taught) and criterion variables is of some help in understanding the effect of changes in ESTV on changes on the criterion measures. If the ESTV increase significantly more for experimentals than for controls and if criterion measures do not change correspondingly then we can doubt the effectiveness of attempting to change these strategies. On the other hand, if criterion measures significantly increase and strategy scores do not, then we must conclude that other (unmeasured) variables such as teacher personality are effecting the changes in the criterion measures.

It is important to note, however, that the purpose of this study is not so much to assess the effectiveness of the Strategy Training Program as it is to study the effect of ESTV changes on the criterion variables. In other words, the emphasis is not on how changes on the ESTV

are brought about but on how changes on the ESTV relate to changes of the criterion variables.

3. The third design limitation has to do with possible biases in the June, 1963 posttest on the Teacher Rating Form and on grades. There could be a bias on the teacher ratings because it was possible for teachers to know whether a student was an experimental or a control subject. This bias is probably not too extensive since most teachers did not know much about the course and probably had few expectations about it. Nonetheless these scores must be interpreted with caution

The problem with grades is more serious since the experimental teacher graded the experimental subjects on one half of their courses (English and social studies). This makes these grades almost uninterpretable in the posttest. These grades will not be used in the data analysis.

Because these two important measures are imperfect in the posttest most conclusions on these variables will have to be based on pretest to followup change scores. In the followup these measures should be unbiased since the students are in high school with totally different teachers.

CHAPTER 4

Empirical Themes of the Strategy Training Program

The bridge from theory to practice is a difficult one, leaving many theoretical loads lightened and altered after the crossing. Our theoretical notions about what themes the Strategy Training Program would teach were quite clear. Yet we did not want to base our assessment of strategy training on the rather tenuous assumption that these theoretical themes were all perfectly communicated by the STP guidance course as it was designed.

To avoid this problem we adopted an assessment strategy designed to measure which theoretical themes actually characterized the Strategy Training Program. Two kinds of measurements were used to search for these themes -- 1) teacher ratings on variables which are theoretically related to the training method, (the Teacher Rating Form) and, 2) a content analysis of strategies used to solve a hypothetical problem (the School Strategy Test). These measures were given before and immediately after the STP to both experimental and control subjects.

We assumed that those variables on which experimental subjects changed significantly more than controls would serve as indicators of what students learned in the STP.

Before describing these results in detail, it is important to discuss some differences between changes occurring from immediately before to immediately after the STP (After-Before changes) and changes occurring in the period between the before testing and the followup testing (Followup-Before changes). Most assessment of change studies have based their assessment of criterion variable changes on After-Before

change measurements. This is in spite of the fact that there are strong theoretical and methodological reasons for doubting the validity of these short-term change measurements. In the interest of brevity, we need mention only two of the most telling criticisms of these measurements.

1. The Hello-Good-bye Effect. This phenomenon, first noted by Hathaway (1948), describes the tendency of patients to tell the doctor what he wants to hear by making their problems seem worse than they are when they enter therapy and better than they are when they leave therapy. This effect has recently been elaborated into a more systematic theory of attitude change by Kelman (1961). Kelman's theory states that attitude changes which are measured while the influencer is present take the form of compliance; and that attitude changes are measured in a situation where influencer will find out about the results take the form of identification. Both compliance and identification type changes are dependent on the influencer. These changes may disappear when the influencer is not longer physically or psychologically present.

Kelman's theory states that only those changes measured under conditions where the influencer is absent and cannot know about the results of the measurement can be assumed to be internalized -- i.e., the changes in attitudes will continue independently of the influencer. Since it is internalized changes which most change programs seek to create; it is therefore important that the measurements be conducted in such a way that the subjects are unaware of their relation to the change program. Obviously, changes measured immediately after a program are, in most cases, are going to be perceived by the subjects are related to the program. Hence one cannot conclude whether these measured

changes will be internalized or whether they represent some form of compliance or identification with the change program's goals.

2. The importance of "refreezing". The second reason for doubting validity of After-Before change measurements is intimately related to the first. As we already suggested, the goal of most change programs is not only to change someone in a certain way, but also to make this change relatively permanent and enduring. Lewin (1947) in his classic essay on the process of change divided the process into three phases, unfreezing, moving, and refreezing. As Schein (Bennis et al 1965) has pointed out, most writers concerned with change have focused only on the middle phase, moving. Relatively little attention has been given to the process of unfreezing (preparing for change) and the process of refreezing (maintaining the newly acquired behaviors).

After-Before change measurements, in most cases, measure changes before refreezing has occurred. It is usually only after the change program has been over for some time that the individual accomplishes the integration of his newly acquired behaviors and attitudes into his own self-image and his role relationships and reference groups. For example, the addict who has "kicked the habit" in a program like SYNANON, must still face the problem of changing his environment. He must choose new friends and modify the ideas of old friends in order to continue his abstinence. If he does not, it is only a matter of time before he will yield to temptation and social pressures. Since After-Before changes have not yet withstood the test of environment forces, we can never be sure that they will last.

The solution to these two problems is, theoretically at least, quite simple. Criterion measures of change should be done in a followup period where subjects are not aware that the testing is related to the change. In this situation refreezing should have taken place (if the time has been long enough) and subjects should not bias their answers to please the change agents. This is the model we tried to follow in assessing the STP. Experimental and control subjects were tested a year and a half after the STP was over, when they were juniors in high school. By this time any changes as a result of the STP should be either "refrozen" or eradicated by environmental forces. In addition most students were unaware of why they were tested at this time although two or three students, on questioning, related the testing to that "new guidance course we took in junior high". Thus criterion variable changes measured in the Followup-Before period should represent a fairly valid measure of the degree to which students changed and remained changed as a result of the STP.

But the Followup-Before change results are a story for Chapter 6. In this chapter, we are concerned with After-Before changes. What, in the light of the previous criticisms, can these change scores mean? As we stated at the outset, we want to measure what students learn from the STP -- treating these learnings as intervening variables. These variables, which we call the empirical themes of the STP, will then be related to changes in criterion variables in the followup. After-Before changes on these intervening variables can be conceived of as measures of change during the "moving" phase of the change process. As such they represent a students' intermediate position during the change process.

From the School Strategy Test we should get some idea of what students have learned about strategic problem solving. From the measure we get no idea about how much the student uses these strategies in his everyday life or how internalized his problem solving strategies are. The Strategy Test change scores give an index of change on the lowest level -- telling us only how well the student has mastered the material cognitively.

Changes on the Teacher Rating Form should go one level deeper. For a student to show significant changes on these variables, he must sufficiently demonstrate the strategies in his behavior to have teachers rate him differently. To do this he presumably must first cognitively master the concept and then apply it in his current life situation. The final level of change of course, is measured in the followup. Here a subject has presumably 1) cognitively mastered the strategy; 2) applied it to his behavior; 3) and integrated it into his self-image and social relationships.

After-Before Changes in the School Strategy Test

In measuring changes on the School Strategy Test (SST) we wanted to be open-ended in our selection. Since the Teacher Rating Form measured variables which we thought were relevant to the STP, we wanted, in the SST, to measure changes in a way which would allow for the creation of new variables that we had not previously emphasized. To do this we chose the method of content analysis of contrasting groups.

To begin with we worked only with the experimental group. The experimental subjects were randomly assigned to two groups. The first

group was used to create coding categories which differentiated a subject's pre-test School Strategy Test protocol from his posttest protocol. The second group was set aside to be used for cross-validation of the categories created in the first group.

In the first group of experimental subjects we found four categories which differentiated the before protocols from the after protocols beyond the .05 level of significance (2-tail). These categories were:

1. Suggestions. The number of suggestions the subject made to solve the problem.
2. Variables. The number of aspects of the problem that the subject mentioned as important for its solution.
3. Evaluations. The amount of explicit reasoning and decision strategies used by the subject to solve the problem.
4. Pro-activity. The degree to which the subject showed an active style of mastering the problem.

Other categories which did not reach the .05 level of significance were eliminated.

We felt that these four categories, while they did not exactly correspond to the strategies we outlined at the conclusion of Chapter 1, nonetheless represented reasonable operational definitions of variables the STP was trying to teach. The suggestions category is a good operational definition of the creating Behavior Alternatives strategy in that it represents the subject's ability to think up different ways to solve the stated problem. The variables score and the evaluations score relate most clearly to the Self-Research and Use of Feedback strategy. The Pro-activity category is related to both Involvement and Personal Responsibility.

The four categories were then carefully defined (see Appendix V for these definitions) and taught to a naive coder. This coder then scored the second half of experimental group blind, i.e., she did not know which were before protocols and which were after protocols. E also scored these same protocols blind. There was very high agreement between the naive coder's scores and E's scores. The rank correlation between the two set of SST scores was .94.

The before and after SST scores of the cross validation sample were then compared (see Table 4-0) to test for artificial inflation of scores during the original definition of the coding categories. The before and after scores on the categories in this sample remained significantly different from one another at about the .05 level. (Proactivity only reached the .08 level but it was included anyway. The reader should note, however, the tentative validity of this category.)

We then combined the two groups to get scores for the whole experimental group. These scores presented for experimental boys and girls separately are shown in Table 4-1.

The next step was to show that the changes reported in Table 4-1 were a result of the influence of the STP and not due to practice effects, maturation, etc. To do this we compared before to after SST changes in the experimental group with the same SST changes in the control group (control group protocols were scored blind at the same time the second half of the experimental stories were scored). This comparison is shown in Table 4-2 for both boys and girls.

The most striking result which emerges from an inspection of Table 4-2 is that, for the most part, it is only the STP boys who show

TABLE 4-0

Before and After School Strategy Test Scores for Cross Validation half of the Experimental Group (N = 22)

SST Score	Before	After	P of difference ¹
Total Score \bar{X}	6.52	10.05	P = .01
Suggestions \bar{X}	2.81	4.46	P = .06
Variables \bar{X}	1.78	3.28	P = .05
Evaluation \bar{X}	0.46	1.34	P = .05
Proactivity \bar{X}	1.00	1.46	P = .08

¹Wilcoxon signed Rank test, 1-tail probability

TABLE 4-1

Before and After School Strategy Test Scores
for Experimental Boys (n = 27) and Girls (n = 18)

SST Score	Boys			Girls			1
	Before	After	P. of Diff.	Before	After	P. of Diff.	
Total Score \bar{X} SD	5.37 3.21	10.15 5.30	<.001	8.44 5.48	11.83 3.72	<.01	
Suggestions \bar{X} SD	2.56 1.42	4.37 2.53	<.01	3.83 2.52	4.67 1.76	NS	
Variables \bar{X} SD	1.81 1.70	1.18 2.50	<.02	1.78 2.04	3.67 2.00	<.01	
Evaluations \bar{X} SD	0.33 0.77	1.26 1.45	<.01	0.72 1.10	1.83 1.30	<.02	
Proactivity \bar{X} SD	0.67 1.07	1.41 0.99	<.01	1.61 1.50	1.67 0.94	NS	

1. T test for correlated scores, 2-tail probability

NS = $p > .10$

TABLE 4-2

Comparison Between Experimental Group and Control Group
Before to After Changes in School Strategy Test Scores (Boys and Girls)

A-B SST Change Scores	Boys			Girls		
	Experimental Group (n = 27)	Control Group (n = 26)	P of Diff. ¹	Exp. Gp. (n = 18)	Con. Gp. (n = 14)	P of Diff. ¹
Total Score \bar{X}	4.78	0.35		3.39	0.36	
SD	5.93	3.10	p < .001	5.13	3.71	p < .05
Suggestions \bar{X}	1.81	0.15		0.83	-0.14	
SD	2.87	1.87	p < .02	2.31	1.68	NS
Variables \bar{X}	1.37	0.04		1.89	0.43	
SD	2.79	2.12	p < .05	2.42	1.76	p < .05
Evaluations \bar{X}	0.93	0.23		1.11	0.43	
SD	1.63	1.19	p < .08	1.76	0.98	NS
Proactivity \bar{X}	0.74	-0.08		0.06	-1.07	
SD	1.20	1.14	p < .02	1.39	2.46	NS

1. T test for correlated scores 2-tail probability

NS = p > .10

significant differential changes on the SST variables. The SST "variables" category is the only case where experimental girls showed a significantly greater increase than control girls. Experimental boys on the other hand showed significant increases over control boys on all categories (with the possible exception of Evaluations which was significant at only the .08 level). Both experimental boys and experimental girls, however showed significant increase over controls on total SST scores.

These results suggest that boys and girls might have had very different reactions to the Strategy Training Program.

After-Before Changes on the Teacher Rating Form

The second step in assessing after-before changes was to look for changes which teachers observed in STP and control students. To do this, experimental group changes on the seven strategy training variable teacher ratings were compared with control group changes on these variables. The results of these comparisions are shown in Table 4-3 for boys and in Table 4-4 for girls.

From Table 4-3 we see that the experimental STP boys showed significant increases over control boys on four teacher rating categories. Self-research and Use of Feedback, Personal Responsibility, Involvement, and Creating Behavior Alternatives. Table 4-4, however, shows that there were no significant difference in change scores between experimental and control girls. These results add further support to our suspicion that the STP had markedly different effects on boys and girls.

TABLE 4-3

Experimental and Control Group
Comparison of After-Before Changes on Strategy Training Teacher Ratings--Boys

Strategy Training Variable	Experimental Group Change	N	Control Group Change	N	P of Diff. ¹	
Risk-taking and Decision making	\bar{X} SD	0.59 1.97	17	0.48 1.27	25	NS
Self Research and Use of Feedback	\bar{X} SD	0.37 2.11	19	-0.27 1.51	26	<.05
Personal Responsibility	\bar{X} SD	0.50 1.56	20	-0.15 1.13	26	<.001
Involvement	\bar{X} SD	-0.05 1.12	20	-0.36 1.16	25	<.01
Creating Behavior Alternatives	\bar{X} SD	0.40 1.36	20	0.15 1.06	26	<.06
Tolerance of Ambiguity	\bar{X} SD	-0.06 1.43	17	0.19 1.78	26	NS
Persistence	\bar{X} SD	0.05 1.86	20	0.00 1.57	26	NS

1. T test for correlated scores, 2 tail probability

NS = $p > .10$

TABLE 4-4

Experimental and Control Group
Comparison of After-Before Changes on Strategy Training Teacher Ratings--Girls

Strategy Training Variable	Experimental Group		N	Control Group	N	P of Diff. ¹
	\bar{X}	Change		Change		
Risk-taking and Decision making	\bar{X} SD	-0.50 1.89	12	0.07 0.96	14	NS
Self-Research and Use of Feedback	\bar{X} SD	-0.53 2.60	15	0.25 1.56	16	NS
Personal Responsibility	\bar{X} SD	0.36 2.50	14	0.00 1.67	16	NS
Involvement	\bar{X} SD	-0.08 2.55	14	0.12 1.69	16	NS
Creating Behavior Alternatives	\bar{X} SD	-0.08 2.53	12	0.62 1.27	16	NS
Persistence	\bar{X} SD	-0.77 2.66	13	0.37 1.27	16	NS
Tolerance of Ambiguity	\bar{X} SD	-0.67 2.39	12	0.40 1.02	15	NS

1. T test for correlated scores, 2-tail probability

NS = $p > 10$

Summary -- The Empirical Strategy Training Variables (ESTV)

What did students learn from the STP? One thing appears certain. The answer to this question is different for girls than it is for boys. Experimental girls' change scores were significantly different from those of control girls on only one of the measures used (the School Strategy Test "Variables" score). Thus it would appear that STP girls did not learn the theoretical themes we were trying to teach in the STP. We cannot conclude, however, that girls did not change in the Strategy Training Program. We can only say that they did not change in the way we predicted. We will study these ambiguous results from girls in detail in Chapter 8 but until then, in the interest of clear exposition, we will focus our attention on boys alone.

The boys results offer a much more encouraging picture. We have been able to isolate eight empirical themes which characterized the learnings of the STP boys. In future references we will call these the Empirical Strategy Training Variables (ESTV). These themes are evenly divided between School Strategy Test variables and Teacher Rating variables. This is important because it indicates that STP boys not only cognitively mastered the material in the course (as evidenced by the SST results) but also that the boys demonstrated changes in behavior significant enough to be observed by teachers.

The eight ESTV are listed below:

Empirical Strategy Training Variables (Boys)

School Strategy Test

Suggestions

Variables

Evaluations

Pro-activity

Strategy Training Teacher Ratings

Self-research and Use of Feedback

Personal Responsibility

Involve ment

Creating Behavior Alternatives

We now turn to an empirical validation of these categories.

CHAPTER 5

Validation of the Empirical Strategy Training Variables

The question naturally arises: What do the Empirical Strategy Training Variables mean? Are they in any way associated with a student's effectiveness? While we might argue that, for example, it is important in and of itself that a boy be involved and personally responsible, we would probably be more convinced if these strategies were in some way related to his performance in school or to his self-concept.

As a first step in investigating the relationship between the ESTV and criterion variables, we report in this chapter the correlations between boys initial ESTV scores and their initial criterion variable scores. These correlations, based on data which was gathered before the experimental program began, will give us an indication of how the ESTV "naturally" are associated with criterion variables. We hasten to add, however, that the correlations in no way allow statements of causality. We cannot, for example, say whether involvement causes good grades or whether good grades cause involvement. This important question must be left for a later chapter.

Let us briefly review the criterion variable data available in the initial testing period:

1. Grade average from the eighth grade
2. Three self concept scores from the Coopersmith and Lowry instrument
 - a. Real Self
 - b. Ideal Self
 - c. Self-satisfaction (the discrepancy between real and ideal self)
3. Teacher ratings of self-concept (the mean of the Feelings of Mastery and Self-Respect ratings)
4. Verbal and Mathematical Achievement Test scores

In addition to these variables, we also have an I.Q. score for each boy

The correlations between the above variables and the ESTV are shown in Table 5-1. From this table we can draw several conclusions.

First, it appears that the ESTV are related to performance as measured by school grades. The relationships between grades and the teacher ratings are, however, much greater than those with the SST. Of the SST variables only suggestions is significantly related to grades.

Secondly, except for Proactivity all of the ESTV are significantly related to verbal and math achievement test scores. (Proactivity, in fact, is significantly related only to I.Q., a fact which suggests that the variable may be of little significance.)

A third finding of interest is the strong relationship between the ESTV and teacher ratings of self concept. Apparently teachers feel that students who evidence the Strategy Training Variables have good self concepts. This conclusion should be qualified for the Strategy Teacher Ratings, however. These correlations, the highest in the table, may be artificially inflated by a rating "halo" effect. The relationship should not be entirely discounted, though, since the independently measured SST variables also relate to the teachers' ratings of self concept.

Fourthly, we see from Table 5-1 that the boy's own report of his self concept is in many cases unrelated to his scores on the ESTV. Two significant exceptions should be noted, however. SST Evaluations is positively related to ideal self and negatively related to self satisfaction. The teacher rating, Creating Behavior Alternatives, is positively related to real-self and self-satisfaction.

TABLE 5-1

Correlations Between Empirical Strategy Training Variables and Criterion Variables--All Boys in the Pretest Period (n = 54)

	Criterion Variable							
Empirical Strategy Training Variables	IQ	Grade Average	Verbal Achievement	Math Achievement	Real Self	Ideal Self	Self Satisfaction	Teacher Rated Self-Concept
School Strategy Test								
Suggestions	22	49 ^{xx}	35 ^{xx}	47 ^{xx}	-.04	-.04	.00	.35 ^{xx}
Variables	50 ^{xx}	20	47 ^{xx}	47 ^{xx}	.02	.08	-.09	.37 ^{xx}
Evaluations	30 ^x	25	37 ^{xx}	25	.07	.31 ^x	-.32 ^x	.29 ^x
Pro-activity	35 ^{xx}	.08	15	20	.03	.05	-.03	-.03
Strategy Teacher Ratings								
Self-Research and Use of Feedback	30 ^x	29 ^x	48 ^{xx}	34 ^x	.23	-.02	.25	.59 ^{xx}
Personal Responsibility	40 ^{xx}	46 ^{xx}	48 ^{xx}	49 ^{xx}	.24	-.06	.30	.63 ^{xx}
Involvement	42 ^{xx}	42 ^{xx}	48 ^{xx}	52 ^{xx}	.25	.12	.13	.72 ^{xx}
Creating Behavior Alternatives	46 ^{xx}	40 ^{xx}	53 ^{xx}	44 ^{xx}	.33 ^x	.02	.30 ^x	.70 ^{xx}

x Significant at $p < .05$

xx Significant at $p < .01$

The final issue raised by the above correlation matrix concerns the relationship between I.Q. and the ESTV. With the exception of SST Suggestions all of the ESTV are significantly related to I.Q. This raises a question about how much the relationship between the ESTV and the criterion variables is determined by their common relation to an ability factor (I.Q.).

To investigate this question, we reproduce in Table 5-2 the correlations between the ESTV and criterion variables with I.Q. held constant. As might be expected, I.Q. seems to account for a good portion of the relationship between the ESTV and the performance variables -- school grades and verbal and mathematical achievement test scores. Only SST Suggestions remains significantly related to all three of these variables. Self Research and Use of Feedback and Creating Behavior Alternatives remain significantly related to verbal achievement test scores. All other relationships to performance variables are not significant when I.Q. is held constant.

There is less change in the relationship between the ESTV and self-concept measures. The positive relationship between SST Evaluations and ideal self and the negative relationship between SST Evaluations and self satisfaction remains substantially the same. So do the positive relationships of real self and self satisfaction with Creating Behavior Alternatives. ESTV - Teacher-rated self concept correlations are reduced a bit.

TABLE 5-2

Partial Correlations Between Empirical Strategy Training Variables
and Criterion Variables with I.Q. Held Constant -
All Boys in the Pretest Period (n = 54)

Empirical Strategy Training Variable	Criterion Variable						
	Grade Average	Verbal Achievement	Math Achievement	Real Self	Ideal Self	Self Satisfaction	Teacher Rated Self Concept
School Strategy Test							
Suggestions	63 ^{xx}	42 ^{xx}	60 ^{xx}	27	-19	00	40 ^{xx}
Variables	-14	24	14	-27	-07	-10	21
Evaluations	10	26	04	-02	41 ^{xx}	-36 ^x	20
Pro-activity	-18	-08	-09	-12	-05	-03	-20
Strategy Teacher Rating							
Self-Research and Use of Feedback	15	39 ^x	17	31	-14	26	54 ^{xx}
Personal Responsibility	30	32	28	27	-07	33	55 ^x
Involvement	22	31	30	30	03	14	66 ^x
Creating Behavior Alternatives	25	43 ^{xx}	25	60 ^{xx}	-12	32	65 ^{xx}

x Significant at $p < .05$

xx Significant at $p < .01$

Summary and Conclusions

The analysis of pretest intercorrelations between the ESTV and criterion variables suggests that the ESTV are meaningfully related to both performance and self concept measures. In general it seems that I.Q. is responsible for a good portion of the relationship between ESTV and performance variables but has little effect on relationships between the ESTV and self-concept variables.

It is difficult to interpret the implications of the fact that IQ seems responsible for a significant portion of the relationship between the ESTV and performance variables. There are at least two possibilities. The first hinges on the rather dubious assumption that IQ is unchangeable by the time a student reaches the ninth grade. If this is so, then it would appear that the STP could not be expected to change students' performance since the significant portion of the "natural" relationship between the two variables is accounted for by an unchangeable IQ.

The other possibility is that the natural relationship between IQ and the ESTV means that students of low intelligence have not learned the ESTV naturally, but that in a special learning situation like the STP they might make up lost ground. In other words, this interpretation would argue that the causal links are: IQ (ability) \rightarrow learning the ESTV strategies \rightarrow better performance. Thus improvements in either IQ or ESTV should increase performance.

While a test of these alternative explanations is beyond the scope of this study, it should be clear that it was on the latter assumption that the Strategy Training Program was created.

CHAPTER 6

The Effect of the Strategy Training Program on Boys' Performance in High School

It is simply amazing to see the changes which take place in teenagers when they enter high school. In visiting the high school during and after the followup testing we were surprised by striking modifications in the personalities of boys and girls we remembered from our visits to the junior high school. A tall, awkward, sullen boy now seemed proud and self assured as he sported his tennis letter sweater. A girl we remembered as cheerful, vivacious, and extremely popular now looked pale and drawn with anxiety. "I can't seem to get good grades anymore," she said. Some blossomed and grew in this new environment. They seemed flushed with the excitement of the challenges they faced. Others bore the scars of defeat and shattered dreams. The dream of being a doctor, or a lawyer or even football star had passed forever from them.

Our task in this and the following chapter is to discover which of these changes, if any, can be attributed to the Strategy Training Program and to changes in the Empirical Strategy Training Variables (ESTV). In this chapter we will compare the high school performance of STP boys and control boys on the Empirical Strategy Training Variables and on the criterion variables.

Followup scores on the ESTV

Table 6-1 shows Followup-Before changes in the ESTV for experimental and control boys. It is striking to note that only one of the eight ESTV's, the Teacher Rating of Involvement, shows significantly

TABLE 6-1

Experimental Boys and Control Boys - Comparison of
Followup-Before Changes in Empirical Strategy Training Variables

ESTV Change Scores	Experimental Boys	n	Control Boys	n	P of Difference*	
School Strategy Test						
Suggestions	\bar{X} SD	1.54 2.19	22	1.09 2.31	21	NS
Variables	\bar{X} SD	0.50 1.47	22	0.81 1.84	21	NS
Evaluations	\bar{X} SD	0.32 0.82	22	0.52 1.14	21	NS
Pro-activity	\bar{X} SD	0.45 1.56	22	0.71 1.42	21	NS
Strategy Teacher Ratings						
Self Research and Use of Feedback	\bar{X} SD	0.50 2.15	16	0.61 1.58	23	NS
Personal Responsibility	\bar{X} SD	1.19 2.50	16	0.91 1.28	23	NS
Involvement	\bar{X} SD	1.19 2.21	16	-0.18 1.50	23	$P < .05$
Creating Behavior Alternatives	\bar{X} SD	0.81 2.32	16	1.00 1.59	23	NS

* t test for correlated scores, 2 tail probability

NS = $p > .10$

greater change for experimental boys. All of the other variables which significantly differentiated experimental boys from control boys in the post-test are now insignificant. In fact, controls show greater changes in the followup on five of the eight ESTV (these differences are not significant however). What caused this result? Did experimental boys "forget" what they had learned, or did control boys "catch up"? To answer this question it is useful to look at the mean experimental and control scores on the ESTV in each testing period. In Figure 6-1 we see these means in graphic form. Although experimental boys did show a slight decrease on most variables in after to followup period; the major reason that there is no difference between the two groups in the followup is because of sharp increase in control group performance from after to followup testing.

Although a complete discussion of the implications of these results must wait until we have discussed some other data, some tentative conclusions seem appropriate now. If we take the control group curves to be an indication of the "natural" growth of Strategy Training Program abilities as measured by the ESTV; it appears that boys experience a rapid growth in these abilities in the early years of high school. Furthermore, it appears that while an attempt to increase these abilities before high school begins is successful in the short run; these differences wash out in high school.

We should point out that Involvement is a significant deviate from the pattern just discussed. It is the only one of the ESTV which decreased in the before to after period (it was significant because controls decreased more). It increased sharply in the after to followup



FIGURE 6-1

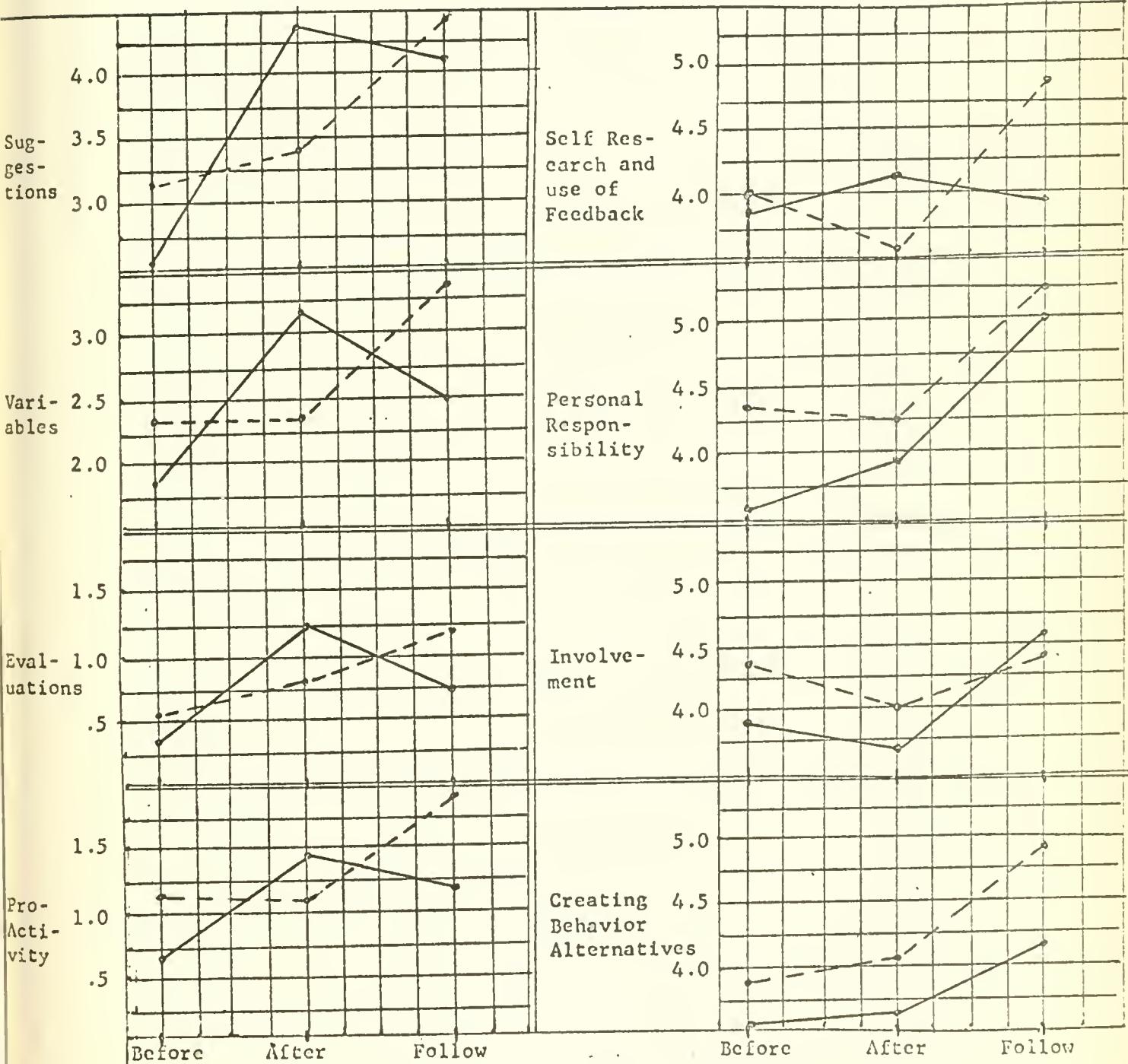
Mean Scores on Empirical Strategy Training Variables in the Before, After and Followup Periods - Experimental and Control Boys

E = —

C = - - -

School Strategy Test

Strategy Teacher Ratings



1. Means will not correspond exactly with Table 6-1 change scores because of missing data.

period resulting in a final score greater than that of the control group. Also note that the experimental group's Personal Responsibility rating showed a similar sharp increase in the after to followup period. (It did not exceed the control group though.) These deviations will become important in our later discussions.

Performance in High School

The most obvious, though perhaps not the most meaningful, indicator of performance in school is grades. Before comparing the STP boys' and control boys' grade averages, it may be useful to indicate some of the general characteristics of grades and grade changes. In the initial testing the mean grade average for all boys was 6.19 (about B-). In the high school followup it was 5.07 (about C). Only seven of the 46 boys showed an increase in grades from before to followup. Thus we are not talking about increases in performance here but rather something like the ability to hold on and not decrease performance. One of the stresses of high school is entering tougher competition where good grades are fewer and harder come by.

From this point of view let us compare the grades of experimental and control boys. In Table 6-2 we report the total grade average change and individual subject grade changes for the two groups. On the whole there is little difference in the changes in the two groups. The most interesting trend in the table is the tendency for experimental subjects to do better in English and social studies while control subjects do better in mathematics, science, and foreign language (significantly so in mathematics and science).

TABLE 6-2

Changes in Followup - Before Grades Comparing
Experimental and Control Boys

Changes in Grades	Experimental Boys	n	Control Boys	n	P of Difference ¹
Total Grade Average \bar{X}	-1.29	23	-0.99	23	NS
SD	1.08		1.38		
English \bar{X}	-1.05	22	-0.78	23	NS
SD	1.85		1.86		
Social Studies \bar{X}	-0.35	23	-0.30	20	NS
SD	1.52		1.45		
Mathematics \bar{X}	-1.28	22	-0.22	23	$p < .10$
SD	1.89		1.84		
Science \bar{X}	-3.07	15	-1.25	16	$p < .02$
SD	1.84		2.02		
Foreign Language \bar{X}	-1.40	15	-1.68	19	NS
SD	1.82		2.5		

1. t test for correlated means, 2 tail probability

NS = $p > .10$

Some doubt is cast on the validity of the science finding, however, since it appears that there is a selective bias against the experimental group due to subjects who had no science grades in the followup. The 18 subjects (11 experimental, 7 control) who reported no science grade in the followup were divided according to whether they were above or below the median after-before grade average change (After-before grade average change proved to be the best predictor of followup - before grade average change, $r = .58$). Nine of the eleven missing experimental subjects were above the median while only three of the seven controls were above the median. Thus, if these missing subjects were included in the sample the difference between experimental and control mean science grades would probably disappear.

Even though these differences in grades are of little significance in terms of performance, they may be quite indicative of some changes in attitudes. Nine experimental subjects who were getting good grades in science chose not to take science courses in high school. Experimental subjects do a bit more poorly in mathematics. Their English and social studies grades are a bit better than those of controls. It is possible that the STP, taught by an English teacher and emphasizing interpersonal skills and social science swayed students away from the physical sciences and mathematics toward a more humanistic orientation. We will have more evidence for this hypothesis.

There were four other indicators of performance in high school besides grades. These are not change scores but single measures taken during the high school followup. Interpretation of these scores, of course involves the assumption that the experimental and control groups are equal initially. We have already tested this assumption (see Chapter 3, p. 79) The four variables are:

1. a teacher rating of Interpersonal Skills
2. a teacher rating of Global Effectiveness
3. Preliminary Scholastic Aptitude Test Score -- Verbal
4. Preliminary Scholastic Aptitude Test Score -- Mathematics

As can be seen from Table 6-3 there are no significant differences between experimental and control boys on any of these variables, although the control boys score slightly higher on all of them.

Thus it appears that the STP had little effect on any of the performance measures.

Self-concept changes in High School

Table 6-4 compares Experimental and control boys on Followup - Before changes in teacher rated self-concept and the three self-concept scores. One finding of significance emerges from this table -- Experimental boys decrease significantly more in ideal self-concept than control boys. Experimentals also show a decrease in real self concept but large standard deviations prevent it from being statistically significant.

The quantitative findings we have reported so far indicate that the STP produced little positive effect on the boys when they entered high school and even suggest that the STP experience may have been detrimental. We now turn to the qualitative data from the current status and Future Plans Questionnaire to further explore this question.

TABLE 6-3

Comparison of Experimental and Control Boys
on Followup Only Performance Variables

Performance Variables	Experimental Boys	n	Control Boys	n	P of Difference ¹
Interpersonal Skills (Teacher Rating)	\bar{X} 4.91 SD 1.56	23	5.26 1.15	23	NS
Global Effectiveness (Teacher Rating)	\bar{X} 4.61 SD 1.52	23	5.04 1.30	23	NS
Verbal PSAT	\bar{X} 80.4 SD 18.3	20	87.5 11.8	19	NS
Mathematical PSAT	\bar{X} 71.7 SD 24.9	20	77.6 27.2	19	NS

1. t test for correlated means 2 tail probability

NS = $p > .10$

TABLE 6-4

Comparison of Experimental and Control Boys
Self-Concept Changes -- Followup - Before

Self-Concept Changes		Experimental Boys	n	Control Boys	n	P of Difference ¹
Teacher Rated Self-Concept	\bar{X} SD	0.22 1.78	16	0.40 1.30	23	NS
Real Self	\bar{X} SD	-9.18 18.8	22	-1.05 20.7	21	NS
Ideal Self	\bar{X} SD	-15.86 16.8	21	-2.09 29.4	21	$p < .06$
Self Satisfaction	\bar{X} SD	8.00 19.7	21	6.00 25.4	21	NS

1. t test for correlated means 2 tail probability
NS = $p > .10$

Results from the Current Status and Future Plans Questionnaire

We were pleased to find that student response to the questionnaire was very positive. They seemed to enjoy writing about themselves and thinking about their future plans. (For a copy of the questionnaire see Appendix IV.) In order to be certain that the after-only comparison of experimental and control boys responses to the questionnaire would be legitimate, the boys' initial scores on the original matching variables were compared. In Table 6-4a we see that the 21 experimental boys and the 22 control boys who responded to the questionnaire were not significantly different before the experiment started on IQ, verbal achievement, math achievement, grade average, or self-satisfaction. Thus we are somewhat justified in assuming that differences which we find on the questionnaire are a result of the experimental boys' STP experience.

The first questions on the form were addressed to the student extracurricular activities. An analysis of the responses to these questions indicated little difference between experimental and control boys. No significant differences were found in either the number or kind of activities participated in by experimental and control boys. Similarly there were no differences in positions of leadership held or honors received.

Analysis of responses to the question about important experiences since entering high school produced one interesting finding. Subjects who reported important interpersonal relationships (e.g., girl friend or teacher who they respected) and subjects who reported personal achievement experiences (e.g., scoring a touchdown, doing well on a summer job) were classified by experimental or control group membership. Those who reported an experience of each type were eliminated from the analysis.

Table 6-5 shows this classification. From it we see that experimental boys tend to report more interpersonal experiences as important while control boys report more personal achievement experiences as important. This result lends further credence to our hypothesis that the STP changed students attributes toward interpersonal experiences.

This hypothesis is further supported by responses to the question about career plans. These responses were divided into those dealing with the humanities and people-centered jobs (e.g., writer, business executive, lawyer, teacher) and those dealing with science, technology and things (e.g., accountant, engineer, scientist). Responses of doubtful classifications were eliminated from the analysis. Table 6-6 shows the number of these responses in the experimental and control group. Only one experimental boy is thinking of a career in science while seven controls are doing so. On the other hand twice as many experimental boys as control boys are planning careers in humanities and people-related professions.

When asked about the certainty of their career choice experimental boys rated themselves as significantly less certain than control boys (see Table 6-7, $p < .10$). When boys were asked how concerned they were about their future career, experimental boys rated themselves slightly more concerned than control boys, but this difference was not significant (see Table 6-7). There are other indications of the experimental boys concern about the future, however. On the important experiences in high school question five experimental boys spontaneously mentioned concerns about their future. No control boys did this. (This difference is significant by binomial test, $p < .06$.) In addition the answers to the

TABLE 6-4a
Comparison of
Initial Scores on Matching Variables for
Experimental and Control Boys
Who Completed Follow-Up Questionnaire

Matching Variables	Experimental Boys (n = 21)	Control Boys (n = 22)	P of Difference ¹
IQ	112.04 11.48	115.33 9.85	NS
Math Ach Test	60.52 13.75	60.77 11.98	NS
Verbal Ach Test	48.41 17.24	48.70 17.00	NS
8th Grade Grades	6.01 1.32	6.36 1.40	NS
Self Satisfaction	52.19 26.56	52.37 27.94	NS

¹T test for correlated means, 2-tail probability
NS = P > 10

TABLE 6-5

Number of
Important High School Experience of
Experimental and Control Boys

	Experimental Boys	Control Boys
Interpersonal ¹ Experiences	7	2
Personal ¹ Achievement Experiences	3	7

n = 19

p < .10 Fisher exact

1. Scored blind by naive coder.

last question (12) were coded by a naive coder to determine satisfaction with future life as seen now. Control subjects were significantly more satisfied (see Table 6-8, $p < .05$).

The composite effect of these results can perhaps best be seen in the response of one experimental boy to the question about future plans:

"A regular college education with possible graduate work. What you are probably waiting for is the fact that I don't know what I'm going to be. High school has ruined many of my future plans (of being a doctor as you probably have in your records). As a matter of fact I don't even think I want a future in science. The main thing that bothers me is I don't know and high school isn't helping."

TABLE 6-6

Career Plans of Experimental and Control Boys

	Experimental Boys	Control Boys
Career in Humanities ¹ (people)	15	7
Career in Science ¹ (things)	1	7

n = 30

χ^2 = 7.30

p < .01

1. Coder blind by naive coder

TABLE 6-7

Certainty of Career Plans and Concern About the Future -
Experimental and Control Boys

		Certainty About Plans		Concern About Future	
		Low	High	Low	High
Experimental Boys	Low	13	9	Low	8
	High	14			
Control Boys	Low	4	16	Low	11
	High				9
		$n = 42$ $\chi^2 = 6.65$		NS	
		$p < .01$			

TABLE 6-8

Satisfaction with Future Life as Seen Now -
Experimental and Control Boys

	Experimental Boys	Control Boys
Satisfied with ¹ Future Life	7	15
Dissatisfied with Future Life	6	3

$n = 31$

$\chi^2 = 3.18$

$p < .05$

1. Coded blind by naive coder.

Summary of Experimental and Control Group Comparisons -- The Effect of the STP

Several conclusions seem warrented about the impact of the STP on boys' high school behavior:

1. On the whole, induced changes on the Empirical Strategy Training Variables produce no ultimate gains over the natural growth of these strategic abilities. While STP boys showed significant ESTV gains over control boys in the post-test there were no differences between the two groups in high school. This was mainly due to large control group increases in the ESTV.
2. The one significant deviate from the above pattern was the teacher rating of Involvement. Teachers saw STP boys as more involved than Control boys.
3. There were no great differences between STP and control boys scores on performance measures -- school grades, PSAT's and global teacher ratings. Mathematics and science grades tended to be lower, however.
4. STP boys showed a significantly greater decrease in ideal self-concept than did control boys.
5. STP boys showed a shift in values away from "abstract concerns" (science, mathematics, technology) toward "human concerns" (the humanities, social science, interpersonal experiences).
6. STP boys were less certain about their future career than were control boys. They also seemed more concerned about the future and were less satisfied with their future life as they saw it.

CHAPTER 7

Correlations between the ESTV and Criterion Variable Changes

The last chapter described some of the changes brought about by the Strategy Training Program. We found some definite differences in the behavior of experimental and control boys in high school. But these differences leave us with a number of questions. We certainly did not predict that the STP would reduce the ideal self-concept of STP boys or that it would leave them more concerned about their future. Similarly we were quite surprised to find that the course increased human concerns at the apparent price of discouraging abstract concerns.

In this chapter we hope first of all to discover which of the Empirical Strategy Variables, if any, are responsible for these changes. Was it the ESTV which produced these unpredicted changes, or some other, unmeasured aspect of the STP? Secondly, we want to know to what degree the changes produced by the STP represent a syndrome; i.e., did a boy who decreased his ideal self concept also show human concerns, increase in involvement, etc. or were the criterion variable changes relatively independent of one another?

ESTV-Criterion Variable Correlations

We begin our investigation of the first question by reproducing in Table 7-1 the correlations between After-Before changes in the ESTV and Followup-Before changes in the criterion variables for experimental boys. From these correlations we are trying to discover how the strategies boys learned in the STP (as measured by the A-B ESTV change scores) relate to their changes on criterion variables in high school. There are only

three significant correlations in this table. F-B change in ideal self is negatively related to A-B changes in Involvement and Personal Responsibility. Thus it appears that the decrease in ideal self can, in large measure, be accounted for by STP increases in Involvement and Personal Responsibility. Involvement increases are also related to increase in self satisfaction. From these results it seems that Involvement and Personal Responsibility, two theoretical themes of central importance to the game model (see Chapter 1), have an unintended consequence - decreases in ideal self-concept.

But we cannot be certain that it is the "pure" theoretical variables which produce this result. It may well be that the STP-induced changes in Personal Responsibility and Involvement distorted their meaning in such a way that the decrease in ideal self resulted. To put it another way, it is entirely possible that other unmeasured STP variables (e.g. the teachers personality, the particular lessons used to teach STP content, the game model theory underlying the STP) interacted with the ESTV in such a way that changes on these variables developed an idiosyncratic, STP specific meaning. Our suspicion that this may be the case for Involvement and Personal Responsibility is increased when we note that there is no initial relationship between these two variables and ideal self concept (see Table 5-1).

But we have an even better way to investigate the idiosyncratic nature of STP induced changes. By comparing the control group correlations of A-B ESTV changes and F-B criterion variables changes with the same experimental group correlations, we can test to see if STP induced changes in the ESTV have the same effects as "naturally" produced ESTV changes.

TABLE 7-1

Correlations Between After-Before Changes in ESTV and
Followup-Before Changes in Criterion
Variables-Experimental Boys (n=21)

ESTV Changes (A-B)	Criterion Variable Changes (F-B)				
	Grade Average	Teacher Rated Self Concept	Real Self Concept	Ideal Self Concept	Self Satis.
School Strategy Test					
Suggestions	33	-10	28	06	15
Variables	-03	-19	-11	16	-28
Evaluations	-34	28	28	-20	-06
Pro-activity	-13	11	-31	13	-36
Strategy Teacher Rating					
Self Research and Use of Feedback	-25	00	18	-09	23
Personal Respon- sibility	-19	18	-19	-50*	26
Involvement	-20	33	-01	-57**	47*
Creating Behavior Alternatives	-25	23	-10	-35	21

*
p < .05

**
p < .01

It should be noted, however, that the control group changes in the ESTV are also idiosyncratic in the sense that they all occurred during the same time period in the same junior high school, etc. They should, nonetheless, be of a more representative nature than STP changes since they were not formally trained -- control students were not all in the same class, did not have the same teachers, were not told about strategy training, etc.

Thus, in comparing the experimental and control group ESTV-criterion correlations we are in some crude sense testing the effect of the one specific program for changing the ESTV (the STP) against "natural" changes in these variables. Table 7-2 shows the experimental and control group correlations and highlights the cases where the correlations differ from one another significantly.

From this table it is immediately apparent that control group A-B changes in Personal Responsibility and Involvement do not produce the same results as experimental changes on these variables did. In the control group the two variables are unrelated to ideal self changes. The control change correlations are, in fact, almost exactly the same as initial correlations reported in Table 5-1. The experimental and control Involvement-ideal self correlations are significantly different from one another ($p < .01$) while the Personal Responsibility -- ideal self correlations are almost significantly different.

Table 7-2 shows still other significant differences between experimental and control correlations. SST suggestions change correlates positively with real self concept change in the experimental group and negatively in the control group. In this case, however, neither of the correlations are significantly different from zero.

TABLE 7-2

Comparison of Correlations Between After-Before Changes in ESTV with
 Followup-Before Changes in Criterion Variables - Experimental
 Boys (n=21) and Control Boys (n=21)

		Criterion Variable Changes (F-B)				
ESTV Changes A-B		Grade Average	Teacher Rated Self Concept	Real Self Concept	Ideal Self Concept	Self Satis- faction
School Strategy Test						
Suggestions	E C	33 11	-10 18	28 -29	* 06	15 09
Variables	E C	-03 27	-19 05	-11 -13	16 49	-28 -48
Evaluations	E C	-34 04	28 -13	-28 -37	-20 43	* -06 -58
Pro-activity	E C	-13 01	11 33	-31 -02	13 00	-36 01
Strategy Teacher Ratings						
Self Research and Use of Feedback	E C	-25 06	00 28	18 09	-09 -01	23 01
Personal Re- sponsibility	E C	-19 14	18 -30	-19 11	-50 -07	26 42
Involvement	E C	-20 06	33 -11	-01 11	-57 12	* 47 04
Creating Be- havior Alter- natives	E C	-25 41	* 23	-10 19	-35 -14	21 46

* Correlations significantly different $p < .05$

** Correlations significantly different $p < .01$

Creating Behavior Alternatives change is negatively related to change in grades in the experimental group and positively and significantly ($p < .05$) related to grades change in the control group. These two correlations are significantly different from one another at the .05 level.

The other variable which shows a significantly different pattern of relationships with criterion change is changes in the SST Evaluation score. While in the experimental group there is no relationship between Evaluations change and change in ideal self and self satisfaction, there is a relationship in the control group. Here an increase in evaluations score is positively related to change in ideal self and negatively related to a change in self satisfaction. Both are significant at the .05 and .01 levels respectively.

For both Evaluations and Creating Behavior Alternatives the control group change correlations are almost equal to the initial correlations reported in Table 5-1.

Thus it appears that STP induced changes on Involvement, Personal Responsibility, Creating Behavior Alternatives and Evaluations are in some way different from natural changes on these variables. The Involvement, Personal Responsibility, and Evaluations differences seem to be centered about the way these variables relate to ideal self concept and self satisfaction. For control boys increases in Evaluations produced increases in ideal self concept and decreases in self satisfaction. Experimental boys who experienced increases in Personal Responsibility and Involvement experienced decreases in ideal self and increases in self satisfaction. These differences between the two groups account for the experimental group decrease in ideal self concept. Yet we still have no clear idea about what produced these differences.

Intercorrelations of STP Induced Changes

But before we speculate about the answer to that question, it may be useful to discuss another related issue. How does the decrease in ideal self concept relate to the other differences we found between STP and control boys in high school? Do these variables all constitute a syndrome in the sense that a given experimental boy would show all of the differences we discovered, or are the differences relatively independent of one another? To investigate this question we tried to get a measure of the five differences we discovered between STP and control boys in high school. Involvement and ideal self are easy -- we simply used Followup-Before change scores. To represent the decrease in mathematics and science grades we choose the Followup-Before change in mathematics grade average because there were more subjects who had mathematics grades, and these grades did not appear to be subject to the bias we discovered in science grade change scores (see Chapter 6). Career certainly was measured by the followup questionnaire rating. Emphasis on human over abstract concerns was derived from a recoding of the experimental questionnaire. In an attempt to classify the questionnaires which were coded indeterminate in reading the career choice question along, E read the whole questionnaire and tried to classify subjects as showing either human concerns or abstract concerns. Using this method only one questionnaire was unclassifiable, giving 15 human concerns and 5 abstract concerns.

The five variables were then interrelated using either χ^2 tables or correlation. Career certainly proved completely unrelated to any of the other four variables. This was probably due to the fact that among STP boys the ratings of certainty showed very little variance. The other

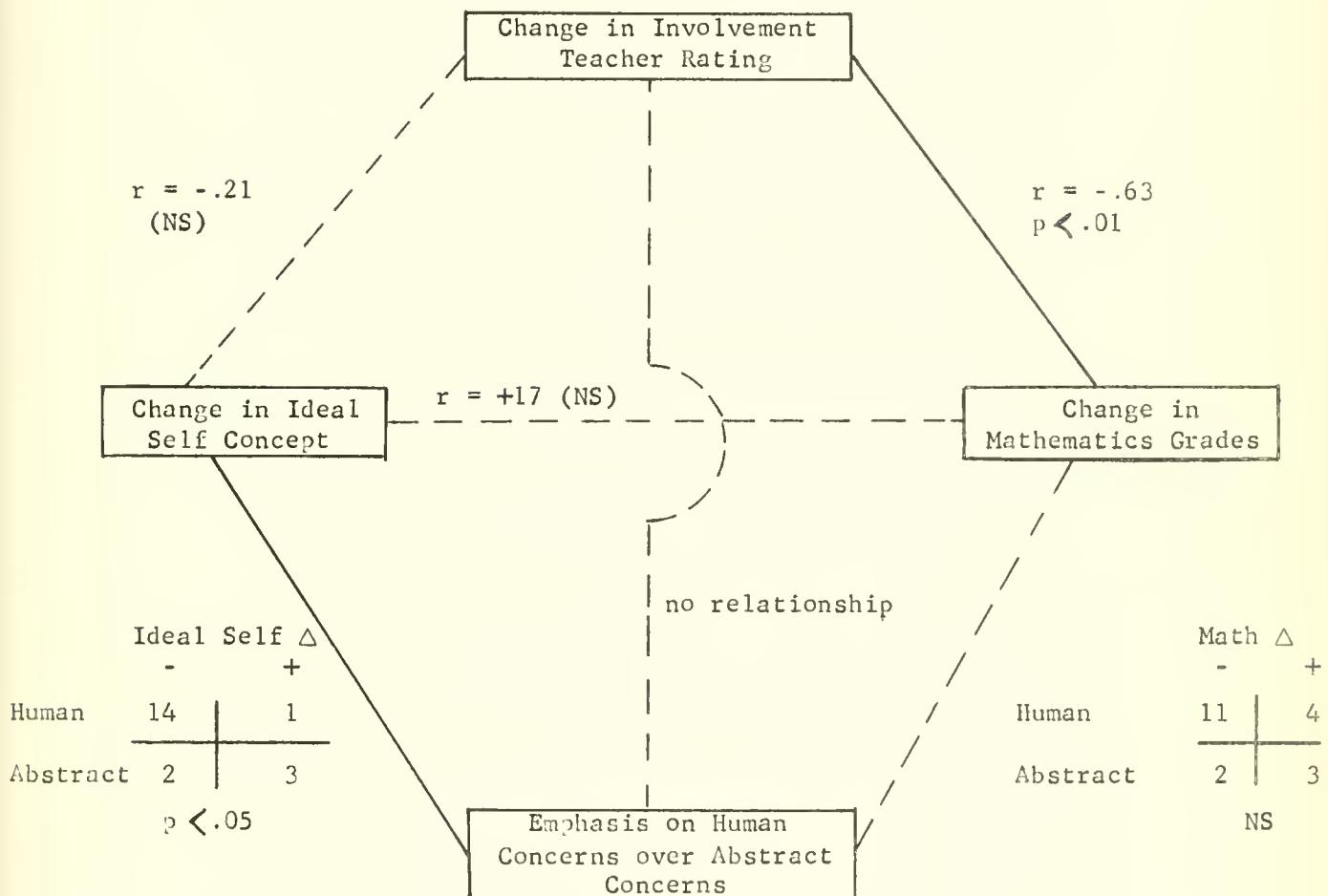
relationships are pictured in Figure 7-1. Ideal self-concept change is significantly related to the choice of human over abstract concerns, i.e. boys who decreased in ideal self-concept were the same boys who showed human concerns on the questionnaire. The other significant relationship is between change in Involvement and change in mathematics grades. Boys who increase in Involvement tend to decrease in mathematics grades.

Two other trends in this figure are important. First, subjects who decreased in mathematics grades tended to show human concerns on the questionnaire. Secondly, there is a negative correlation between F-B Involvement change and F-B change in ideal self-concept. That this correlation is not larger is surprising since the A-B involvement with F-B ideal self was -.57. At any rate changes in the two variables appear to be negatively related.

From the above analysis we can conclude that ideal self changes, Involvement changes, changes in mathematics grades, and emphasis on human concerns over abstract concerns tend to be associated with one another though certainly not on a one to one basis. Career certainty is not related to the other four variables, but this may be due to its distribution characteristics.

FIGURE 7-1

Inter-relationships Between STP Induced
Followup-Before Changes (Experimental Boys)



Summary of Results

1. Differential effects of ESTV changes in experimental and control groups seemed to account for the STP boys ideal self-concept decrease in high school. For control boys increases in Evaluations produced increases in ideal self-concept and decreases in self-satisfaction. Experimental boys who experienced increases in Personal Responsibility and Involvement experienced decreases in ideal self-concept and increases in self-satisfaction.

2. Except for career certainty, the changes produced by the STP i.e. increase in Involvement decrease in ideal self-concept, decrease in mathematics grades and emphasis on human over abstract concerns, tend to be interrelated.

CHAPTER 8

The Effect of the Strategy Training Program on Girls

The title of this chapter is perhaps a misnomer since our results indicate that the STP had almost no discernable effect on girls. Furthermore, there is virtually no case where the girls results replicate the findings for boys. It is almost as though boys and girls experienced entirely different programs.

As the reader will recall from Chapter 4, experimental girls showed only one difference over controls on after-before changes on the Strategy Training Variables. This was an increase on the SST Variables score. In spite of this fact, we will, in the table which follows, present results on all eight of the ESTV defined for boys. We do this only for comparison purposes. Keep in mind that the variables score alone characterized the learning of girls in the STP.

Initial ESTV and Criterion Variable Correlations

Table 8-1 shows the initial correlations between the ESTV and criterion variables for girls. Contrary to the results for boys shown in Table 5-1, there are almost no significant relationships between the ESTV and criterion variables, including I.Q. The significant correlations between the Strategy Teacher Ratings and Teacher Rated Self-Concept are probably an artifact due to a rating halo effect. The other four significant correlations just barely reach the .05 level. This lack of concurrent validity for girls' scores on the ESTV indicates that the ESTV are irrelevant to girls' performance. Girls must use other strategies than those emphasized in the STP to get good grades and achieve self-esteem.

TABLE 8-1

Correlations Between Empirical Strategy Training Variables and Criterion Variables -- All Girls in the Pretest Period (n = 31)

ESTV	Criterion Variables				
	IQ	Grades	Self Concept Teacher Rating	Verbal Achievement	Math Achievement
School Strategy Test					
Suggestions	13	-.04	13	.17	.08
Variables	19	-.08	13	.22	.18
Evaluations	30	.11	.11	.17	.02
Pro-activity	.08	.12	.05	-.04	-.08
Strategy Teacher Ratings					
Researching	-.04	.06	.38*	.02	.26
Personal Responsibility	.09	.27	.32	.11	.31
Involvement	.09	.23	.56	.29	.36*
Behavior Alternatives	.04	.14	.48**	.23	.35*

*
p < .05
**
p < .01

Differences Between STP Girls and Control Girls in High School

Looking now at the differences between experimental and control girls in ESTV changes in high school, we find the situation is changed only slightly from the A-B ESTV changes (see Table 8-2). The increase in Variables score remains greater for experimental girls than control girls ($p < .01$).

STP girls show a significant decrease over control girls on the Creating Behavior Alternatives teacher rating, however ($p < .05$). On the other ESTV experimental girls tend to do slightly worse than control girls.

On the performance variables, Followup-Before school grades change, mathematical and verbal PSAT, and teacher ratings of Interpersonal Skills and Global Effectiveness, there were no differences between experimental and control girls. These comparisons are presented in Table 8-3 and 8-4.

Changes in self concept scores also show no significant differences between experimental and control girls (see Table 8-5). There is a tendency, however, for control girls to improve more in real self-concept and in teacher rated self-concept.

An analysis of experimental and control girls' Current Status and Future Plans questionnaires showed none of the differences discovered between experimental and control boys' questionnaires. In fact we were able to find only one difference between girl's responses and this was significant at only the .10 level. We report it because it corroborates the tendency for girls to have lower real self concepts in the followup.

TABLE 8-2

Experimental and Control Girls -- Comparison of Followup-Before
Changes in Empirical Strategy Training Variables

F-B ESTV Changes	Experimental Boys	n	Experimental Girls	n	P of Dif- ference ¹
School Strategy Test					
Suggestions	\bar{X} SD	-0.07 2.63	14	0.46 1.01	13 NS
Variables	\bar{X} SD	1.86 2.47	14	0.08 1.33	13 $p < .01$
Evaluations	\bar{X} SD	0.50 1.35	14	0.23 1.25	13 NS
Pro-activity	\bar{X} SD	0.21 1.47	14	0.46 1.32	13 NS
Strategy Teacher Ratings					
Self Research and Use of Feedback	\bar{X} SD	0.07 2.82	15	1.00 2.24	16 NS
Personal Respon- sibility	\bar{X} SD	0.29 2.34	14	0.87 1.87	16 NS
Involvement	\bar{X} SD	-0.50 2.99	14	0.81 1.51	16 NS
Creating Behav- ior Alternatives	\bar{X} SD	-0.29 2.08	14	1.25 1.64	16 $p < .05$

1. t test for correlated means, 2 tail probability

NS = $p > .10$

TABLE 8-3

Changes in Followup-Before Grades Comparing
Experimental and Control Girls

F-B Changes in Grades		Experimental Girls	n	Control Girls	n	P of Dif- ference
Total Grade Average	\bar{X} SD	-0.53 0.88	16	-0.42 0.85	15	NS
English	\bar{X} SD	-1.13 1.16	16	-0.40 1.36	15	NS
Social Studies	\bar{X} SD	-0.93 1.44	15	-0.67 1.07	15	NS
Mathematics	\bar{X} SD	-0.15 2.18	13	-0.67 2.01	12	NS
Science	\bar{X} SD	-0.67 1.70	6	-1.50	2	a
Foreign Language	\bar{X} SD	0.00 1.82	9	-1.11 1.66	9	NS

1. t test for correlated means, 2 tail probability

NS = $P > .10$

a not enough cases for comparison

TABLE 8-4

Comparison of Experimental and Control Girls on
Followup Only Performance Variables

Performance Variables		Experimental Girls	n	Control Girls	n	P of Dif- ference ¹
Interpersonal Skills (Teacher Rating)	\bar{X} SD	4.72 1.69	18	5.25 1.52	16	NS
Global Effectiveness (Teacher Rating)	\bar{X} SD	4.06 1.61	18	4.87 1.49	16	NS
Verbal PSAT	\bar{X} SD	71.4 21.3	13	73.2 22.6	12	NS
Mathematical PSAT	\bar{X} SD	56.1 24.2	13	60.7 29.1	12	NS

1. t test for correlated means, 2 tail probability

NS = $P > .10$

TABLE 8-5

Comparison of Experimental and Control Girls
Self-Concept Changes -- Followup-Before

F-B Self Concept Changes		Experimental Girls	n	Control Girls	n	P of Dif- ference ¹
Teacher Rated Self Concept	\bar{X} SD	0.02 1.77	15	0.91 1.31	16	NS
Real Self	\bar{X} SD	0.46 43.3	13	10.21 23.5	14	NS
Ideal Self	\bar{X} SD	-10.92 25.5	13	-6.00 29.2	14	NS
Self Satisfaction	\bar{X} SD	10.46 40.1	13	16.21 26.5	14	NS

1. t test for correlated means, 2 tail probability

NS = P > .10

TABLE 8-6

Comparison of Experimental and Control Girls
Satisfaction with Current Life

	Experimental Girls	Control Girls
Satisfied with Current Life	5	9
Dissatisfied with Current Life	10	5

$$n = 29$$

$$\chi^2 = 2.78$$

$$p < .10$$

In response to question 12 of the questionnaire, experimental girls tended to be less satisfied with their current life than control girls (see Table 8-6). There were no differences like those for boys on satisfaction with future life.

Reasons for Girls Lack of Response to the STP

The results we have presented indicate that girls not only did not learn the strategy training skills measured by the ESTV, but also they show that these skills are unrelated to girls' performance and self-concept. How can we account for differential response of boys and girls to the STP.

The literature on psychological differences between males and females gives us one clue about why the STP seemed irrelevant to girls. A number of studies have shown that males have an instrumental response style, while females customarily respond contextually (Winter, 1965). That is, males think and act in terms of setting goals and working toward them, while females think and act in terms of maximizing satisfactions within a given context. Men are field independent while women are field dependent (Witkin et al, 1962). Implied here is the fact that men have a greater abstractive ability which allows them to conceptualize situations other than one which they currently occupy (McClelland, 1965). Males, for example, customarily score higher than females on tests of abstractive ability (Cunningham, 1964).

When classified on this instrumental-contextual dimension, the Strategy Training Program appears extremely instrumental. The very concept of strategy implies means-ends thinking. The main purpose of the game model was to provide students with an abstract conceptual tool which

would allow them to overcome passive (read "contextual") responses to their life situations. All of the ESTV, with the possible exception of Involvement, emphasized analysis and action as strategies for achievement.

Thus it would appear that while the STP was congruent with instrumental orientation of boys it could be considered almost inimical contextual orientations of girls.

Can we muster any data from the STP assessment to support the above reasoning? A few facts appear relevant.

First of all, we find the instrumental and contextual response style of boys and girls nicely illustrated by the intercorrelations of their initial self-concept scores. (See Table 8-7). From this table we can see that boys' current self-evaluation (real self-concept) is highly associated with their ideal self concept. Girls' self-evaluations on the other hand, are highly associated with how satisfied they are with themselves. Boys seem to say, "I'm as good as the goals I set". (an instrumental, field-independent orientation) Girls say, "I'm as good as my attainment of whatever goals I have." (a contextual, field dependent orientation) Further evidence for this boy-girl difference is found in the fact that girls have a higher negative correlation between ideal self-concept and self-satisfaction than boys. Thus, for them self-satisfaction is more a function of setting lower goals.

The second relevant finding is that boys have higher abstractive ability than girls. This is indicated by the fact that boys score higher than girls on the initial mathematics achievement test. Boys had a mean math achievement score of 48.5 while girls had a mean score of 36.6. (This difference is significant, $p < .0005$ 2-tail.)

TABLE 8-7

Comparisons of Boys and Girls Initial
Self-Concept Correlations

	Real Self With Ideal Self	Real Self With Self Satisfaction	Ideal Self With Self Satisfaction
Boys n = 54	.68	.31	-.49
Girls n = 35	-.01	.70	-.72
Significance of Difference	p < .0002	p < .02	p .10

The third finding fills a critical missing link in our argument. We have shown that girls tend to have a contextual orientation and less abstractive ability than boys. But does this lead them to participate less in the STP? According to the STP teacher's rating of class participation it does. On a three point scale of participation, boys received a mean score of 2.33 while girls scored only 1.65 ($p < .01$). Furthermore, for all experimental subjects, a correlation of .42 ($p < .01$) between participation and initial mathematics achievement test score indicates that STP participation is to some degree a function of abstractive ability.

Summary

The above results lead us to conclude that the STP had no effect on girls. Girls participated less in the STP and learned little from it. The course had no significant effect on their behavior in high school. This was to be expected since the strategy training variables were, in fact, unrelated in the pretest period to either girls' performance or self-concept.

We feel that girls did not respond to the STP because it was inimical to their characteristic contextual response style. The STP's emphasis on game analysis and strategy were more characteristic of a masculine, instrumental approach to problems.

CHAPTER 9

Summary, Interpretations, and Conclusions

We begin this final chapter by reviewing the STP assessment results reported in Chapters 4-8. Following this summary we will focus on the meaning of these findings and try to unravel some of the mysteries created by them. In the final section of this chapter the implications of this research for other change programs will be discussed.

A Summary of the Results of the Strategy Training Program

1. Girls were unaffected by the STP. They learned little from the guidance course and there were no important differences between STP girls and control girls on criterion variable scores in high school. Furthermore, there was no relationship between initial scores on themes taught in the STP and initial criterion variable scores. This suggests that girls use a different coping style than boys to learn and to achieve self-esteem. There is some evidence for this suggestion about achieving self-esteem in the finding that girls' self-evaluation is highly correlated with self-satisfaction while boys' self-evaluation is highly correlated with their ideal self-concept.

2. Boys learned many of the strategies that the STP was trying to teach. Experimental boys showed significant increases over controls on eight strategy training variables in the post-test: These Empirical Strategy Training Variables (ESTV) were:

School Strategy Test

1. Suggestions
2. Variables
3. Evaluations
4. Proactivity

Strategy Teacher Ratings

5. Self-Research and Use of Feedback
6. Personal Responsibility
7. Involvement
8. Creating Behavior Alternatives

The fact that the ESTV were evenly divided between the School Strategy Test and Strategy Teacher Ratings indicates that boys not only cognitively mastered STP course material (as evidenced by the School Strategy Test variables) but also that the boys demonstrated changes in behavior significant enough to be observed by teachers.

3. Initial scores on the strategies which STP boys learned (the ESTV) were significantly related to both initial performance and self-concept variables. In general it seemed that IQ was responsible for a good portion of the relationship between ESTV and performance variables but had little effect on relationships between the ESTV and self-concept variables.

4. It appears that strategy training served only to accelerate the experimental boys' acquisition of strategic skills; skills which they would have otherwise naturally acquired in high school. The experimental boys' superiority over control boys in Pre to Post increases on the ESTV was erased in the followup by large "natural" increases on these variables by control boys in the posttest to followup period. With the exception of the Involvement teacher rating (see below) the STP accelerated learning produced no significant differences between experimental and control boys' ESTV scores in high school.

5. Even though ESTV differences between experimental and control boys in high school were slight, there were other significant differences between the two groups' high school behavior. These were:

- a. STP boys showed significant increases over controls on the involvement teacher rating (the only one of the ESTV to significantly differentiate experimental boys from controls.)
- b. Though on the average there were no differences between experimental and control boys' scores on performance variables (school grades, PSAT's and global teacher ratings), the mathematics and science grades of experimental boys tended to be lower than those of the control boys.
- c. STP boys showed a significantly greater decrease in ideal self-concept than control boys.
- d. STP boys showed a shift in values away from "abstract concerns" (science, mathematics, technology) toward "human concerns" (the humanities, social science, interpersonal experiences).
- e. STP boys were less certain about their future career than were control boys. They also seemed more concerned about the future and were less satisfied with their future life as they saw it.

The first four of the differences noted above seemed to represent a kind of syndrome for STP boys. That is, a boy who showed a high Involvement increase tended to decrease in ideal self-concept, show human concerns, and decrease in mathematics grades. Concern about the future was unrelated to the above variables however.

6. There appeared to be marked differences between STP-induced changes and natural control group changes. Differential effects of pretest to posttest ESTV changes in experimental and control groups seemed to account for the STP boys ideal self-concept decrease in high school. For control boys increases in Evaluations produced increases in ideal self-concept and decreases in self-satisfaction. Experimental boys who experienced increases in Personal Responsibility and Involvement experienced decreases in ideal self-concept and increases in self-satisfaction.

Interpretation of the Assessment Results

Perhaps the first question we would like answered as a result of our assessment efforts is, "Was the Strategy Training Program a success or failure?" While we can generally conclude that the STP was unsuccessful in producing marked changes in either boys' or girls' criterion variable performance in high school, a few further remarks about the boys' results seem warranted.

It is difficult to decide whether the high school changes which STP boys experienced are beneficial or harmful. Our educated guess would be that an increase in involvement would be beneficial. A decrease in ideal self-concept doesn't sound too good, but one might argue that the boys became more realistic in their aspirations. The decrease in mathematics grades is certainly not desirable, but perhaps it only represents a shift in interest away from abstract concerns. The emphasis on human over abstract concerns is probably neither good nor bad in itself. It is unfortunate, however, that this kind of value change was an unanticip-

pated consequence of the STP and hence involuntary for the participants. The STP boys' greater concern and uncertainty about the future sounds uncomfortable for them, but this again may be a reflection of a greater realism on their part.

It will be impossible for us here to decide whether these changes are good or bad. In the following discussion we will treat the results as differences between groups without applying an evaluative judgement. Thus, our concern will be to discover how the STP changes were produced rather than evaluate their worth.

One fact is clear, however. The STP did not produce the increases in grades, real self-concept and self-satisfaction which we predicted it would. In this sense the course was unsuccessful. Why was this so?

The most obvious answer would be that the strategies we were trying to teach were not related to performance and self-concept. This answer, however, is not too persuasive in the light of the data in Chapter 5 which shows that the Empirical Strategy Training Variables are significantly related to performance and self-concept variables.

A second answer to the question would be that the STP was not successful because the strategies were not effectively taught. On first inspection the Strategy Training Program does not look like a very powerful change program. It was very short -- one hour a week for one semester. The curriculum units were by no means polished finished products, and much time was wasted, therefore, in irrelevant discussions. The STP teacher was not a social scientist and on more than one occasion he learned the night before the next day's lesson. Furthermore, the course

did not offer the students many opportunities to emotionally confront their own personal problems. With the exception of one or two role playing sessions later in the course, the format was largely didactic; teaching abstract material about game analysis.

How could this short, primitive, intellectual program have a meaningful impact on the lives of the students? It is very tempting to conclude that it was the teaching method which is responsible for the failure of the STP. But this answer must be somewhat modified by two facts. First of all, our results indicate that the STP did have some effect on boys, i.e., increased involvement, decreased ideal self, etc. The program was therefore not totally without impact. No matter how short, or primitive or intellectual it was, it still produced some significant behavioral changes in the participants.

Further evidence for the potency of the STP is provided by the Empirical Strategy Training Variables. The STP boys did show significant increases over controls on these eight variables in the posttest period. The fact that there were no differences on these variables in the followup was due to the fact that control boys "caught up" with the STP boys. Thus, we conclude that the teaching method, while not perfect, still cannot be held totally responsible for the STP's lack of success.

One other possibility should be examined in this light. The pattern of ESTV changes may indicate that early strategy training is wasted effort. The STP, it appears, taught junior high school boys strategies that they would have otherwise learned naturally in high school. The STP boys short term gains in strategic ability did not serve to accelerate them even further in high school; they just maintained

their post STP level. This phenomenon would seem to be the best explanation of the STP failure to increase grades and self-concept -- the early training only accelerated the natural learning process which controls were experiencing. As a result the two groups were equal in high school

While the above argument seems to account adequately for the failure of the STP to increase grades and self-concept, it does not explain how and why the STP produced the effects that it did. To answer this question we must examine the theory of strategy training and the game model. Our task is to determine what strategy training theory themes produced the differences between STP boys and control boys in high school. (These differences are summarized in point number 5 at the beginning of the chapter.)

Let us begin by trying to understand the meaning of fact that the Involvement teacher rating was the only ESTV to differentiate experimental and control boys in high school. The Involvement variable, plus the teacher rating of Personal Responsibility and the SST Proactivity score, represent most clearly what might be called the existential component of the game model. As we have discussed in Chapter One, involved, active, responsible choice is a key concept in both existential theory and in what we have called the game attitude. The Strategy Training Program itself was built around this existential value system. It emphasized that personal change is largely based on a personal commitment to change, a personal choice -- involvement in life is better than detachment -- action is to be preferred over reaction.

This existential emphasis may well be the theme which gave the Strategy Training Variables a special meaning to the STP students, thereby producing in STP boys the high school outcomes we have discovered. Members of the control group were not exposed to the game model with its existential emphasis, and, as we saw in Chapter Seven, this difference is reflected in the fact that control group ESTV changes showed a very different pattern of correlations with criterion variable changes than did the experimental group ESTV changes. The superiority of STP boys followup increases on Involvement gives some indication that the exposure to existential values was in fact unique to STP students. While the Personal Responsibility variable did not significantly differentiate experimental and control boys in the followup, it appears to be only because of large control group increases on the variable. Experimental boys showed exactly the same increase on Personal Responsibility that they did on Involvement (1.19). Proactivity, the third "existential" variable, also does not show an increase in the followup. But this is most likely due to the technical aspects of the proactivity measurement scale. It is only a three point scale and thus allows a maximum change score of only two. Furthermore, the results reported in Chapter Five suggest that Proactivity has no construct validity. All in all, it seems reasonable to conclude that as, a result of the STP, experimental boys were more influenced by existential values than were control boys.

We might wonder at this point why girls were not influenced by the existential emphasis of the STP, i.e., why they did not increase on Involvement and Personal Responsibility.

We have already noted in Chapter Eight that a girl's contextual orientation is contrary to the masculine instrumental orientation of the STP. But how does this relate to existentialism. Winter (1963) in a recent paper on "The Male Sense of Self" addresses herself to this question. After discussing Sartre's concept of freedom of choice as the essential element in humanness, she records Barrett's (1962) analysis of this position:

"Barrett, examining this notion, is struck at once by the fact that Sartre's paradigm of humanness seems inappropriate when applied to the psychology of the ordinary woman. What sense does it make to say that a woman's identity is constituted by her project? Barrett asks. Her whole life with whatever freedom it reveals, is rather the unfolding of nature through her. Barrett concludes that Sartre, without recognizing it, is presenting a peculiarly masculine psychology. His is the statement of a man who identifies his own reality with his thought."

Perhaps we as the men who designed the STP with its existential emphasis made the same error.

Let us return to the changes STP boys experienced. If we can conclude that the major impact of the STP was the communication of existential values; what can we learn about the effect of acquiring these values? Or to remove the cause and effect implication of the question 'What themes characterize the existential value syndrome taught by the STP?

The first finding of note is the high negative correlations between After-Before changes in Involvement and Personal Responsibility and Followup-Before changes in ideal self-concept (see Chapter Seven). These correlations strongly suggest that one effect of the STP's existential emphasis was to reduce STP boys' ideal self-concepts. This result, which at first is surprising and not at all theoretically obvious, makes much more sense when we recall the subjective, experiential emphasis of existentialism. Existentialist thought maintains that reality lies not in the

idea or ideal but in experience. One's goal is to actualize the present rather than anticipate the future. Hence, one's ideals become less important and self-satisfaction and self-acceptance, i.e., accepting "who you are", become more important. (Note in this context that A-B Involvement change correlates positively with F-B self satisfaction change.)

The above reasoning is in some sense corroborated by the very lives of existential philosophers. Many of them came to their philosophy as disillusioned idealists. Sartre for example gives this account of the childhood experiences which formed his early philosophical idealism. He describes his reading of the Larousse Encyclopedia:

"I would set it laboriously on my grandfather's blotter, I would open it. There I would take real birds from their nests, would chase real butterflies that alighted on real flowers. Men and animals were there in person: the engravings were their bodies, the texts were their souls, their individual essence. Beyond the walls, one encountered rough sketches which more or less approximated the archetypes without achieving their perfection: the monkeys in the zoo were less monkey, the men in the Luxembourg Gardens were less man. In Platonic fashion, I went from knowledge to subject. I found more reality in the idea than in the thing because it was given to me first and because it was given as a thing. It was in books that I encountered the universe: assimilated, classified, labeled, pondered, still formidable; and I confused the disorder of my bookish experiences with the random course of real events. From that came the idealism which it took me thirty years to shake off."

Unfortunately, for many existentialists disillusioned idealism has led to a cynical existentialism. We discussed in Chapter One how this trend led us to take care that our teaching of the game model did not convey the cynical "life is a game" attitude. The STP boys' decrease in ideal self-concept suggests that we may not have been successful in this attempt. The boys' greater concern and uncertainty about the future and further weight to this argument. To check this further we coded the Current

Status and Future Plans Questionnaire for cynical remarks and indications of despair. There were no differences between experimental and control boys in number of cynical remarks or indications of despair. On the whole STP boys did not appear to be highly cynical or have great feelings of despair as a result of the course. Nonetheless, it does seem fair to conclude that the existential emphasis of the STP in some measure tarnished boys' bright, clear images of their future life. As we have already mentioned, it is difficult to determine for certain whether this effect is beneficial or harmful. It may reflect a greater realism in boys' perception of the future. On the other hand, "be realistic" has always been a great rallying cry for cynicism.

The second difference between STP and control boys in high school was the STP boys' greater interest in human over abstract concerns. This, of course, fits very well into what we know about existential values. Existential writers have been among the most vocal in their distrust of scientific laws and technology, decrying their alienative effect on human experience. They are the most dedicated of humanists. Their writings portray most vividly the elusive dynamics of personal and interpersonal experience. The great split in philosophy between the analytic positivists and the humanistic existentialists perhaps portrays on a grand scale the value difference we have discovered between STP boys and their control counterparts.

As with the decrease in ideals, we have difficulty in judging the intensity of the effect of these STP induced humanistic values on the lives of the boys who took the course. As we discovered in Chapter Six,

there is reason to believe that this value change may have caused boys to drop science courses in high school. Furthermore, we have found that STP boys show significantly greater decreases in mathematics grades than controls. Thus, it seems that the humanistic over abstract value emphasis of the STP was quite powerful in that it had some definite behavioral effects.

To summarize, the existential emphasis of the STP seems to account for the differences we discovered between STP and control boys in high school. As a result of this emphasis STP boys became more involved in their work, but saw the future as less promising. They came to value human concerns over abstract concerns. This change in values probably caused them to drop science courses and do worse in mathematics.

Implications for Other Change Programs

The results of the Strategy Training Program assessment suggest several implications for other change programs. Perhaps the first point to be made is that behavior can be changed. The STP, compared to other change programs like group therapy or psychoanalysis, was a relatively low impact experience for the students. It was didactic and short. Most personality theorists would have predicted that it would have no effect at all. Yet, we were able to isolate changes in behavior resulting from the STP a year and a half after the course was finished. For researchers of intensive change programs like psychotherapy this suggests that less time should be spent using no-treatment control designs to discover whether behavior can be changed or not. Their efforts might be more fruitfully

directed toward discovering what kinds of changes are brought about by specific change techniques.

For the initiators of less "intensive" change programs, and here we refer mainly to special educational programs, we would suggest another lesson. Relatively short experiences like theSTP apparently do have long-term effects. Furthermore, these effects are not always intuitively obvious, e.g., the decrease in ideal self concept and mathematics grades in the STP. The customary "common sense" evaluation of educational programs ("well the kids liked it a lot and the teacher felt that it was helpful. One boy even ... etc.") is probably not sensitive enough to ascertain these long-term effects. In spite of the expense and patience required, careful long-term assessment studies need to be designed to evaluate these programs effectively.

The need for long-term follow-up should be further underscored. It is clear that our assessment of the STP would have been quite different had we stopped with a posttest as most studies do. While experimental subjects showed significant increases on eight strategy variables in the posttest; in the follow-up they scored higher than controls on only one strategy variable. Since most change programs are interested in relatively long term changes in behavior, follow-up studies are important.

Careful assessment is important for yet another reason. We had no idea when we designed the STP that it would not work with girls. If we had done this assessment study we probably still would not know. Change program assessment designs should not only try to discover the average effect of the program; they also should attempt to determine what kind of participant benefits from the program or is untouched by it.

The STP results raise a second question. If the results can be generalized we might conclude that early training to handle future situations may be impractical. The STP was designed to teach strategies which would enable students to better direct and control their future lives in high school and later. The assessment results indicate that STP boys did learn these strategies, but probably would have learned them without the STP.

We, of course, can draw no definite conclusions from this one case, but it will be interesting to see if assessments of special education courses designed to stimulate early growth of students' reading or mathematical abilities will replicate the STP results.

Thirdly, it is interesting to speculate about to what extent a shift to human concerns is a result of most programs run by social scientists. While the STP, with its existential concern taught by an English teacher, undoubtedly placed an unusually heavy emphasis on this theme; there is reason to suspect that this value change may be an unintended result of other change programs. In the achievement motivation training program (AMTP) for underachieving boys (Kolb, 1965) one unpredicted result was a decrease in boys' mathematics and science grades similar to that we have reported in the STP. Thus, in a sense we have replicated an unpredicted result. Further research should attempt to discover the reasons for this change from scientific to human values.

The final implication of the STP results has to do with teaching goals as opposed to teaching strategies. In Chapter One we compared the STP with the AMTP and concluded that the AMTP taught achievement strategies

plus achievement goals while the STP taught only strategies, leaving students free to choose their own goals. We did not teach goals in the STP because we felt it would be more democratic to leave the choice of goals to the individual. In America changing values has the negative connotation of "brainwashing".

The STP results raise some questions about the wisdom of this decision. STP boys' decrease in ideal self-concept and greater concern and uncertainty about the future might have been avoided by a greater emphasis on goal-setting and a more systematic attempt to create attractive role models with whom students could identify. Teaching the means to achievement without developing, at the same time, meaningful achievement goals may only produce frustration in the student. He finds himself "All dressed up and no place to go."

In some current research on self-directed change (see Kolb, Winter, and Berlew, 1966) we attempted to assess the relative importance of the goal-setting phase and the goal-attaining phase of the change process. While the results to date are not conclusive, it appears that, given a fixed amount of time (e.g. 5 months), the more time spent on goal setting the greater the final change score.

If these results can be applied to the STP program, it would seem that the course should add units concerned with choosing and committing oneself to personal goals. When students become committed to a goal, then perhaps they will be more motivated to learn strategies to achieve it.

REFERENCES

Allport, Gorden. Personality and social encounter. Boston: Beacon Press, 1960.

Barrett, William. Irrational man. New York: Doubleday Anchor Books, 1962.

Barron, Frank. Creativity and psychological health. Princeton: D. Van Nostrand, 1965.

Barry, Ruth and Wolf, Beverly. Epitaph for vocational guidance. New York: Teachers College Columbia, Bureau of Publications, 1962.

Bennis, W., Schein, E., Berlew, D., and Sceele, F. (Ed.). Interpersonal dynamics. Homewood, Illinois: Dorsey Press, 1965.

Bensen, O. "Simulation of international relations and diplomacy". In H. Borko (Ed.), Computer applications in the behavioral sciences. New York: Prentice Hall, 1962, 574-595.

Bross, Irwin. Design for decision. New York: MacMillan, 1953.

Bruner, Jerome. "The conditions of creativity". In Gruber et. al. (Ed.), Contemporary approaches to creative thinking. New York: Atherton Press, 1962, 1-30.

Burns, Arthur. "A graphical approach to some problems of the arms race". J. Conflict Resolution, 1959, 3, 326-342.

Cassady, Ralph. "Taxi-cab rate war". J. Conflict Resolution, 1957, 1, 364-368.

Coopersmith, Stanley. "A method for determining types of self esteem". J. abnorm. soc. Psychol., 1959, 59, 87-94.

Cummingham, Scott. Sex differences in critical evaluation. Unpublished paper, Harvard University, 1964.

Ellsberg, Daniel. The theory and practice of blackmail. Unpublished manuscript, 1959.

Erikson, Erik. "Youth: Fidelity and diversity". Daedalus, 1962, winter, 5-28.

Eysenck, Hans. "The effects of psychotherapy". International J. Psychiatry, 1965, 1, 99-144.

Frank, Jerome. Law and the modern mind. New York: Tudor Publishing, 1930.

Frank, Jerome. "The role of cognitions in illness and healing." In Research in Psychotherapy, vol. II. Washington, D.C.: Amer. Psychol. Assoc., 1962, 1-12.

Fromm, Erich. Escape from Freedom. New York: Rinehart Co., 1941.

Glover, Edward. Comment on Eysenck's paper: "The effects of Psycho-
therapy". International Journal of Psychiatry, 1965, 1, 158-161.

Goffman, Erving. Asylums. New York: Anchor, 1961a.

Goffman, Erving. Encounters. Indianapolis: Bobbs-Merrill, 1961b.

Gross, Neal and R. Herriott. Staff leadership in public schools: a
sociological inquiry. New York: John Wiley, 1965.

Guilford, J.P. "Creativity: its measurement and development". In
Parnes and Harding (Ed.), A source book of creative thinking.
New York: Charles Scribners, 1962.

Haley, Jay. Strategies of Psychotherapy. New York: Grune and Stratton,
1963.

Hall, Calvin and Lindsay, Gardner. Theories of Personality. New York:
John Wiley, 1957.

Hatheway, S.R. 'Some considerations relative to non-directive psycho-
therapy as counseling.' J. Clin. Psychol., 1948, 4, 226-231.

Henry, W.E. and Schlien. "Affective complexity and psychotherapy:
time limited and unlimited." J. Proj. Techniques, 1958, vol. 22.

Kaufmann, Walter. "Existentialism from Dostoevsky to Sartre". In
Kaufmann (Ed.) Existentialism from Dostoevsky to Sartre. New York:
Meridian Books, 1956.

Kelly, George. The psychology of personal constructs, vol. 1. New York:
W.W. Norton, 1955.

Kelman, Herbert. 'Processes of opinion change'. Public Opinion Quarterly,
Spring, 1961.

Kibbe, M. Croft, C. and Nanus, B. Management games: a new technique
for executive development. New York Reinholt, 1961.

Kolb, David; Winter, Sara; and Berlew, David. "Two studies on self-
directed change". MIT Sloan School working paper, No. 182-66, 1966.

Kolb, David. "Achievement motivation training for under-achieving high
school boys". J. Pers. Soc. Psychol., 1965, 2, 783-792.

Kubie, Lawrence. Comment on Eysenck's paper: "The effects of psycho-
therapy". International Journal of Psychiatry, 1965, 1, 175-178.

Leary, Timothy. "How to change behavior". In G.S. Nielson (Ed.), Clinical Psychology, vol. 4. Copenhagen: Munksgaard, 1962, 50-68.

Lewin, Kurt. "Group decision and social change". In Maccoby et. al. (Ed.), Readings in social psychology. New York: Holt, Rinehart, and Winston, 1947.

Luborsky, Lester. "Research problems in psychotherapy: a three year followup". In Research in Psychotherapy, vol II. Washington, D.C.: Amer. Psychol. Assoc., 1962, 308-330.

McClelland, David. "Toward a theory of motive acquisition." Amer. Psychologist, 1964, 20, 321-333.

McClelland, David. "Achievement motivation can be developed". Harvard Business Review, 1965a, November-December.

McClelland, David. "Wanted: a new self image for women". Cosmopolitan, 1965b, May, 67-75.

McNeil, Elton. "Personal hostility and interactional aggression. J. Conflict Resolution, 1961, 5, 279-290.

Maltzman, R. "Experimental studies in the training of originality". Psychol. Mono., 1960a, No. 496.

Maltzman, R. "On training originality". Psychol. Rev., 1960b, 229-241.

May, Rollo. "The emergence of existential psychology". In R. May (Ed.), Existential psychology. New York: Random House, 1961.

Meehl, Paul. Comment on Eysenck's paper: "The effects of psychotherapy". International Journal of Psychiatry, 1965, 1, 156-157.

Meyerson, Lee; and Michael, Jack. "A behavioral approach to counseling and guidance". Harvard Ed. Rev., 1962, 32, 383-402.

Moore, Omar; and Anderson, A. "Autotelic folk models". The Soc. Quar., 1959.

Osborn, Alex. Applied imagination. New York: Charles Scribner's, 1957.

Piaget, Jean. The moral judgement of the child. Glencoe, Illinois: The Free Press, 1932.

Rapoport, Anatol. Fights, games and debates. Ann Arbor: University of Michigan Press, 1960.

Rogers, Carl and Dymond, Rosalind. Psychotherapy and personality change. Chicago: University of Chicago Press, 1954.

Rogers, Carl. "Two divergent trends". In R. May (Ed.), Existential Psychology. New York: Random House, 1961a.

Rogers, Carl. On becoming a person. Boston: Houghton-Mifflin Co., 1961b.

Sartre, Jean-Paul. Existentialism and human emotions. New York: Philosophical Library, Inc., 1957.

Sartre, Jean-Paul. The words. George Braziller, Inc., 1964.

Schelling, Thomas. The strategy of conflict. Cambridge, Massachusetts: Harvard University Press, 1960.

Shoben, E.V. "Guidance: remedial function or social reconstruction". Harvard Ed. Rev., 1962, 32, 430-443.

Snyder, Glenn H. Deterrence and defense: toward a theory of national security. Princeton, New Jersey: Princeton University Press, 1961.

Sprowls, R.C. "Business simulation". In H. Borko (Ed.), Computer applications in the behavioral sciences. New York: Prentice-Hall, 1962, 556-573.

Strauss, Anselm. "Regularized status-passage". In Bennis et.al. (Ed.), Interpersonal dynamics, 1964, 409-416.

Super, Donald. The psychology of careers. New York: Harper, 1957.

Szasz, Thomas. The Myth of mental illness. New York: Harper, 1961.

Thibart, John and Kelley, Harold. The social psychology of groups. New York: Wiley, 1959.

Tiedeman, David and Field, Frank. "Guidance: the science of purposeful action applied through education." Harvard Ed. Rev., 1962, 32, 483-501.

Tillich, Paul. The courage to be. New Haven: Yale University Press, 1952.

Von Neumann, John and Morgenstern, Oskar. Theory of games and economic behavior. Princeton: Princeton University Press, 1944.

White, Robert. The abnormal personality. New York: The Ronald Press, 1956.

Winter, David. Structural-functional views of sex roles: studies in the nuclear family and small groups. Unpublished paper, Harvard University, 1965.

Winter, Sara, K. The male sense of self. Unpublished paper, Harvard University, 1963.

Witkin, et.al. Psychological differentiation. New York: Wiley, 1962.

Wrenn, C. Gilbert. The counselor in a changing world. Washington: Amer. Personnel and Guidance Assoc., 1962.

Zetzel, Elizabeth. Comment on Eysenck's paper: "The effects of psychotherapy". International J. Psychiatry, 1965, 1, 144-150.

APPENDIX I

The Teacher Rating Form

TEACHER RATING FORM

Teacher _____

Student _____

Date _____

School _____

Please rate this student in each of the 11 categories by placing an X in the space where you think he or she best belongs right now in comparison with other juniors in high school. The "H" space represents the highest rating for high school juniors, the "L" space represents the lowest rating for high school juniors, and the middle or fourth space represents average. If you do not know the student well enough to make a judgement, place an "X" in the middle space.

1. Feelings of Mastery: He believes that he has control over his environment; he believes that he has effective study habits; feels capable of reaching his goals.

H ____ ; ____ ; ____ ; ____ ; ____ ; ____ ; L

2. Aspires Neither Too High Nor Too Low: makes realistic decisions; sets realistic goals for himself, etc. Takes on tasks neither too difficult nor too easy for him; expects neither too much nor too little from himself.

H ____ ; ____ ; ____ ; ____ ; ____ ; ____ ; L

3. Tries To Find Out How He Is Doing: Asks questions to see whether or not his thoughts on a problem are correct; tries to find out where he went wrong on tests; observes how people respond to him; etc.

H ____ ; ____ ; ____ ; ____ ; ____ ; ____ ; L

4. Personal Responsibility: Does his own work instead of asking other people for their answers; takes it upon himself to do something rather than leave it up to someone else to do or up to chance.

H ____ ; ____ ; ____ ; ____ ; ____ ; ____ ; L

5. Involvement: Feels that his work and activities are really important to him; enjoys getting really involved in his work.

H ____ ; ____ ; ____ ; ____ ; ____ ; ____ ; L

6. Creates Behavior Alternatives: Shows flexibility in solving problems and adapting to new situations. Tries to figure out the best ways to get things done.

H ____ ; ____ ; ____ ; ____ ; ____ ; ____ ; L

7. Persistence: Sticks with a task even when the going gets rough; finishes difficult homework assignments.

H ____ ; ____ ; ____ ; ____ ; ____ ; ____ ; L

8. Tolerates Ambiguity: Remains with a task even when he is not sure how he is doing; remains in difficult situations where he is confronted with many unknowns.

H____;____;____;____;____;____;L

9. Self-Respect: Does not lose respect for himself even after a series of setbacks; respects himself even if he has done poorly on a task; seems to like himself.

H____;____;____;____;____;____;L

10. Interpersonal Skills: Is friendly, is liked and respected by others, gets along well with peers, teachers, etc.

H____;____;____;____;____;____;L

11. Global Effectiveness: This rating attempts to ascertain your evaluation of the student's ability to deal with life; how successful he is and will be; how capable he is of attaining his own goals; to what extent he is leading a fulfilling life.

H____;____;____;____;____;____;L

How well do you know this student?

Very Well____;____;____;____;____;____;Not At All

Additional Comments: (use back if more space is needed.)

Thank you for your cooperation.

APPENDIX II

The School Strategy Test

Name _____

Date _____

School _____

PROBLEM SET

Directions: Read the paragraph on this page and answer the seven questions which follow it as well as you can. You will have about 10 minutes to finish this test, so work quickly. You may refer again to the paragraph as often as you need to.

ANDY

The Western City High School Chess Club needs money -- at least fifty dollars -- to cover travel expenses for their tournament with Frasertown. They have decided to sponsor a dance. Andy, who has been elected chairman of the fund raising committee, learned that when the Dramatics Club ran a dance last year they lost over twenty-five dollars. As it turned out, forty-seven people attended. The band Andy wants for the dance will charge thirty dollars for the evening.

1. What will happen?

2. If you were Andy, how would you go about solving the problem?

3. List as many other possible solutions to the problem as you can.

4. What would be the best possible solution to the problem and why?

5. What are the long run advantages and disadvantages of this solution?

6. What are the important facts to consider in arriving at a solution?

7. What other information (if any) would you need to solve the problem and how would you go about getting it?

APPENDIX III

Self-Concept Test

Name _____

Date _____

School _____

INVENTORY OF STUDENT SELF-ATTITUDES

Directions: Below are some statements on which you are asked to rate yourself. For each of the statements circle the number in Column I, at the LEFT, which you think best describes your characteristics at the PRESENT TIME. Then, circle the number in Column II, at the RIGHT, which best describes your WISH about each statement.

MY ABILITY IS AT PRESENT

ABILITIES

I WISH MY ABILITY WERE

Very Great	Great	Average	Not Too Great	Small	Somewhat	1.	to take criticism	1	2	3	4	5
						2.	to make decisions	1	2	3	4	5
						3.	to assume leadership	1	2	3	4	5
						4.	to work independently	1	2	3	4	5
						5.	to solve problems	1	2	3	4	5
						6.	to speak before groups	1	2	3	4	5
						7.	to express ideas in writing	1	2	3	4	5
						8.	to stick to my convictions	1	2	3	4	5
						9.	to think clearly	1	2	3	4	5
						10.	to carry out responsibility	1	2	3	4	5
						11.	my artistic ability	1	2	3	4	5
						12.	my athletic ability	1	2	3	4	5
						13.	my music ability	1	2	3	4	5
						14.	my dramatic ability	1	2	3	4	5
						15.	my mechanical ability	1	2	3	4	5

MY ABILITY IS AT PRESENT					ABILITIES		I WISH MY ABILITY WERE				
Very Great	Great	Average	Not Too Great	Small			Very Great	Great	Average	Not Too Great	Small
1	2	3	4	5	16.	my intellectual ability	1	2	3	4	5
1	2	3	4	5	17.	my social ability	1	2	3	4	5
1	2	3	4	5	18.	my self-confidence	1	2	3	4	5
1	2	3	4	5	19.	my sense of humor	1	2	3	4	5
1	2	3	4	5	20.	my appearance	1	2	3	4	5
1	2	3	4	5	21.	my eagerness to learn	1	2	3	4	5
1	2	3	4	5	22.	my judgment	1	2	3	4	5
1	2	3	4	5	23.	my physical health	1	2	3	4	5
1	2	3	4	5	24.	my imagination	1	2	3	4	5
1	2	3	4	5	25.	my disposition	1	2	3	4	5
1	2	3	4	5	26.	controlling my temper with boys	1	2	3	4	5
1	2	3	4	5	27.	controlling my temper with girls	1	2	3	4	5
1	2	3	4	5	28.	being a good size and build for my age	1	2	3	4	5
1	2	3	4	5	29.	controlling my temper with teachers	1	2	3	4	5
1	2	3	4	5	30.	getting assignments straight the first time	1	2	3	4	5
1	2	3	4	5	31.	being willing to help others	1	2	3	4	5
1	2	3	4	5	32.	being confident, not shy or timid	1	2	3	4	5
1	2	3	4	5	33.	being good at things that require physical skill	1	2	3	4	5
1	2	3	4	5	34.	being a good student	1	2	3	4	5
1	2	3	4	5	35.	making friends easily	1	2	3	4	5
1	2	3	4	5	36.	being neat and clean in appearance	1	2	3	4	5

MY ABILITY IS AT PRESENT					ABILITIES		I WISH MY ABILITY WERE				
Very Great	Great	Average	Not Too Great	Somewhat Small			Very Great	Great	Average	Not Too Great	Somewhat Small
1	2	3	4	5	37.	being able to take orders from teachers without resenting it	1	2	3	4	5
1	2	3	4	5	38.	getting a lot of fun out of life	1	2	3	4	5
1	2	3	4	5	39.	being not too skinny, not too fat	1	2	3	4	5
1	2	3	4	5	40.	paying attention to teachers not closing my ears to them	1	2	3	4	5
1	2	3	4	5	41.	studying hard, not wasting time	1	2	3	4	5
1	2	3	4	5	42.	having new, original ideas	1	2	3	4	5
1	2	3	4	5	43.	having plenty of friends, among the girls	1	2	3	4	5
1	2	3	4	5	44.	having plenty of friends, among the boys	1	2	3	4	5
1	2	3	4	5	45.	being popular	1	2	3	4	5
1	2	3	4	5	46.	having nice features (nose, eyes, etc.)	1	2	3	4	5
1	2	3	4	5	47.	feeling that teachers have confidence in me	1	2	3	4	5
1	2	3	4	5	48.	liking others in class	1	2	3	4	5
1	2	3	4	5	49.	being able to change things when they don't suit me	1	2	3	4	5
1	2	3	4	5	50.	having nice clothes, right for my age	1	2	3	4	5
1	2	3	4	5	51.	having fun at school with teachers	1	2	3	4	5
1	2	3	4	5	52.	sticking to things, not giving up easily	1	2	3	4	5
1	2	3	4	5	53.	being easy to get along with	1	2	3	4	5
1	2	3	4	5	54.	being fair	1	2	3	4	5
1	2	3	4	5	55.	liking to live as I please	1	2	3	4	5
1	2	3	4	5	56.	understanding boys' feelings	1	2	3	4	5
1	2	3	4	5	57.	understanding girls' feelings	1	2	3	4	5
1	2	3	4	5	58.	having nice teeth	1	2	3	4	5
1	2	3	4	5	59.	understanding teachers' feelings	1	2	3	4	5
1	2	3	4	5	60.	budgeting time spent with study T.V. and outside activities	1	2	3	4	5

APPENDIX IV

The Current Status and Future Plans Questionnaire

S101

Current Status and Future Plans
Questionnaire

CONFIDENTIAL

Name _____

FOR RESEARCH ONLY

School _____

Year in School _____

Age _____

1. List the organized activities both in and outside of school which you have participated in since you have entered high school.

2. What positions of leadership or responsibility have you held in these activities?

3. What honors or formal recognitions have you received since you entered high school?

\$101

4. Describe in short paragraphs your two or three most important experiences since entering high school. (These can be anything from important thoughts you have had to positions you have held. The way you feel about these experiences is what counts -- regardless of what others may think of them.)

s101

5. What plans do you have for your future? Include any further education plans you may have and also the occupation that you plan to enter.

6. How certain are you about this choice? (Circle the appropriate number)

1	2	3	4	5	6	7	8	9	10
Completely Uncertain					This is definitely what I will do.				

7. How concerned are you about your future career?

1	2	3	4	5	6	7	8	9	10
Not Concerned					Very concerned. I spend a lot of time thinking about the future.				
I don't think about my future at all									

8. What alternative career plans have you formulated? (Please list these briefly.)

S101

9. Describe in a brief paragraph what you daily life will be like fifteen years from now.

10. What are your three most important life goals.

1.

2

3.

11. How did you decide on these goals?

S101

12. What is your personal assessment of yourself? Include an evaluation of your relationships with your parents, your friends, and teachers; an evaluation of your achievements in school and elsewhere; and your satisfaction with your future life as you now see it.

APPENDIX V

Scoring Manual for the School Strategy Test

SCORING MANUAL FOR THE SCHOOL STRATEGY TEST

The School Strategy Test was administered to see whether the guidance course has any effect on the students' resourcefulness in approaching and solving everyday realistic problems. In scoring, we tried to analyze the process through which a subject goes in attempting to deal with the situation presented. In choosing the scoring categories, we picked those which indicated a systematic evaluation of the situation and the number of ways to solve it. The categories were empirically defined by the method of contrasting groups. Four categories were statistically significant. The four analytical categories are: suggestions, recognition of variables, evaluations and pro-activity. These are described in detail below.

General Scoring Conventions

All categories in the scoring system are scored independently question by question. Scorable remarks which are repeated are scored only once, the first time they occur. All sub-categories are added to give the total for each category. The sum of the four categories gives the total Strategy Test Score.

I. Suggestions -- The number of suggestions the subject made to solve the problem.

A. Total Number. Score +1 for each different suggestion for a solution to the problem of financing the chess club's trip, including ways of making a successful dance or alternatives to the dance, e.g., Score +1, for "have a lot of publicity" or "hire a cheaper band" or "have a white elephant sale".

Exceptions: Do not score "have the dance" or "not have the dance" unless the answer is accompanied by additional reasoning. E.g., "It's better to have no dance than to lose money."

B. Elaborations. Score +1 for all elaborations of any suggestion, or for a description of any event. E.g., "have an auction where kids bring in old things and people bet on them." Do not score here for a reason why a solution is a good one because this is scored in Reasons Why, a sub-category under Evaluations, e.g., have a candy sale because kids love to eat.

II. Variables -- The number of aspects of the problem that the subject mentioned as important for its solution.

Score +1 in questions 5, 6 and 7 for a statement showing recognition of a variable in the problem, e.g., "publicity may cost too much money". "The cost may be high to hire a hall". "A good band will attract a crowd". Score +1 for "losing money" or "gain money" in answer to question 5 only if the response is elaborated, e.g., "You may lose money if the expenses are too high".

III. Evaluations -- The amount of explicit reasoning and decision strategies used by the subject to solve the problem.

A. Reasons why. Score +1 for a statement explaining why a particular solution is offered as a suggestion, e.g., "have a car wash because that way you have no chance of losing money".

B. Number 4, no solution. Score -1 if no specific solution is given to question 4. Score -1 also if "none" is written in or if the space has been left blank.

C. Decision Strategies. Score +1 for each response to question 6 showing recognition of various strategies in the decision-making process, e.g., "think the problem through and come to a solution". "Think of all the alternatives". "Think of the advantages and disadvantages."

IV. Pro-activity -- The degree to which the subject showed an active style of mastering the problem. This is scored on a continuum from -1 to 0 to +1.

A. Score -1 for each statement showing a sense of helplessness, that things happen without human intervention, e.g., "The price of the tickets will go up."

B. No score for an answer to any question using the general "They" or "You" as the subject, e.g., "They'll hire a cheaper band."

C. Score +1 for each answer using the personal "I", "Andy" or "he" as the subject, e.g., "Andy will lose money". "I would use a lot of publicity."

ASSIGNMENT
Date Due

	APR 19 '78	
	MAY 25 '79	
	JUN 4 '82	
	JUN 17 '85	
	NOV 4 '85	
	DEC 1 '85	
	DEC 1 '86	
	FEB 14 1990	
	SEP 09 2002	

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